DOCUMENT RESUME

ED 347 154 SP 033 950

| | |
|---|---|
| AUTHOR | Hazlett, Shirley Holder |
| TITLE | It's Your Choice: A Program for Cardiovascular Health. Teaching Handbook. |
| INSTITUTION | California State Dept. of Education, Sacramento.; Zellerbach Family Fund, San Francisco, Calif. |
| REPORT NO | ISBN-0-936434-13-9 |
| PUB DATE | 85 |
| NOTE | 121p. |
| AVAILABLE FROM | SFSC/It's Your Choice, P.O. Box 5646, San Francisco, CA, 94101 ($7.50). |
| PUB TYPE | Guides - Classroom Use - Teaching Guides (For Teacher) (052) |
| EDRS PRICE | MF01 Plus Postage. PC Not Available from EDRS. |
| DESCRIPTORS | *Cardiovascular System; Curriculum Guides; *Health Education; *Health Promotion; High Schools; *Life Style; Program Guides; *Units of Study; Well Being |
| IDENTIFIERS | American Heart Association |

ABSTRACT

This publication is designed to help high school students develop a lifestyle that promotes cardiovascular and overall health; activities are intended to promote total health and wellness. The handbook is composed of a curriculum guide and classroom materials, and is designed to fit into a comprehensive health education program. Multidisciplinary goals are to create growth in self-awareness, effective decision making, and responsible interaction in resolving problems or coping. Students are encouraged to identify personal habits that increase or decrease cardiovascular wellness; identify positive health changes they can and will make; and act on decisions to make positive lifestyle changes. Contents of the guide are organized as follows: a preface; project history; program description; topics and student learning objectives; program overview; guidelines for using "It's Your Choice"; and student handouts and transparency masters. Nine units are included, each focusing on a particular topic: (1) Cardiovascular Health; (2) Blood Pressure; (3) Exercise; (4) Sodium; (5) Saturated Fats and Cholesterol; (6) Body Fitness; (7) Tobacco Use; (8) Stress Management; and (9) Total Cardiovascular Self-Assessment. An appendix lists a variety of related books and brochures, examination procedures, and questions. (LL)

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# IT'S YOUR CHOICE

## A PROGRAM FOR CARDIOVASCULAR HEALTH

## TEACHING HANDBOOK

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Shirley Holder Hazlett, Ph.D.

Published by the Zellerbach Family Fund

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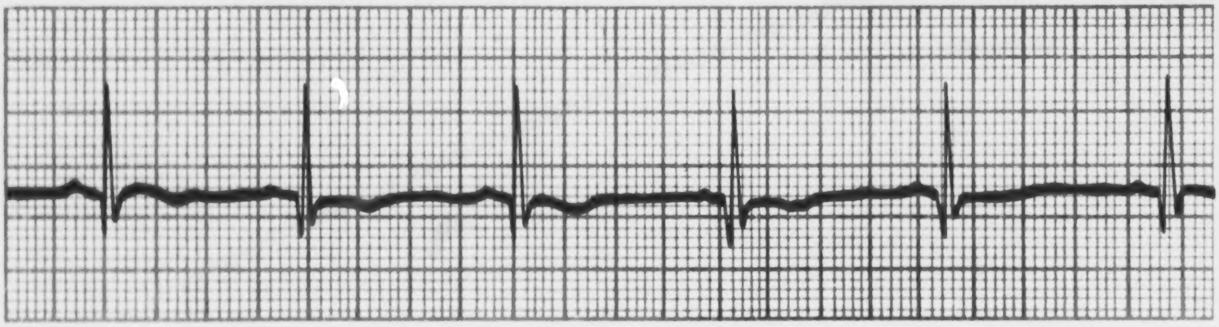

A Health Education Project of the Zellerbach Family Fund

# TEACHING HANDBOOK

Shirley Holder Hazlett, Ph.D.

School Health Program ● California State Department of Education

# IT'S YOUR CHOICE

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Revised 1985

ISBN 0-936434-13-9

Edited, designed and produced by San Francisco Study Center/Community Graphics

For information on the *It's Your Choice* program:

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For copies of *It's Your Choice Teaching Handbook*, $7.50 per copy (includes tax and handling), send check or purchase order to:

SFSC/It's Your Choice
P.O. Box 5646
San Francisco, CA 94101

Illustration, page 30, adapted from *The Heart Health Book,* © 1982 by the Trustees of Boston University. By permission of Bantam Books. All rights reserved.

Appreciation is extended to Gale J. Bell for permission to print *Bell's Relaxation Exercise.*

Note: The guidelines in this *Handbook* are for typical, healthy adolescents. Youths with physical limitations or restrictions should follow their physician's recommendations, which may differ from those of the *Handbook*.

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# Preface

Nothing is more basic to learning than good health. With heart disease the number one health problem, our secondary school students can benefit from a cardiovascular course of study that leads to wellness and enhances learning. *It's Your Choice* aids California students in making wise health decisions which can serve them well throughout their lives.

Bill Honig
California State Superintendent
of Public Instruction

Heart disease is the number one contemporary health problem. To combat heart disease people should adopt beneficial health behavior in childhood and continue it into adulthood. It is better to prevent cardiovascular disease by a healthy lifestyle than to treat it by surgery.

Daily we make decisions that directly change the chances of maintaining and improving the health of our heart and blood vessels. These decisions should be based on knowledge and the wish to develop a life that promotes cardiovascular health.

Schools should provide programs that help students promote and protect their cardiovascular well-being. *It's Your Choice* is a program to accomplish this goal.

Martin Gershman, M.D.
Alternate Chairman, California District,
American Academy of Pediatrics

# Project History

*It's Your Choice* was the brainchild of Dr. Robert Benjamin of the Hayward Community Health Center. Dr. Benjamin sought funding, provided guidance and advocated the development of a cardiovascular health education program for high school youth. Dr. Benjamin's advocacy attracted the interest and support of the Zellerbach Family Fund; the result was the development of a cardiovascular health education program in the Oakland Unified School District. Patricia Hill, comprehensive health education consultant with the California State Department of Education, greatly contributed to the development of the program from its inception in 1979 to her retirement in the spring of 1983. Shirley Holder Hazlett developed the first version of the cardiovascular health education program, *It's Your Choice*. Rahemah Amun Wrice and Ruth Beard provided leadership and direction to the piloting of the program in the Oakland School system.

The Oakland Unified School District piloted the first version of *It's Your Choice* from 1979 through 1982. During that time, 13 high school teachers and school nurses and administrators at Oakland's Fremont, Oakland, McClymonds, and Castlemont high schools implemented the initial draft of the program. Recommendations for revising content and format were requested and received from teachers and students. Those who worked with the program generally concurred that it effectively addressed a vital health issue.

Many organizations advised and assisted during the piloting phase, among them: the School Health Program unit of the California State Department of Education, the California State Department of Health Services' Hypertension Control Program, the American Heart Association, Alameda County Chapter, the Alameda County Hypertension Council, the Bay Area Hypertension Council, Alameda County Health Care Services Agency, the Zellerbach Family Fund, West Oakland Health Center, and East Bay Children's Hospital.

Since the 1982-1983 school year, the School Health Program unit of the California State Department of Education has provided consultation as well as office space for the project director while the San Francisco Education Fund serves as fiscal agent. Graphics and media assistance are provided by the San Francisco Study Center/Community Graphics. A team of teachers, health educators and medical personnel continue to critique curriculum revisions. Individual teachers who belong to the California Association of School Health Educators (C.A.S.H.E.) critiqued single units of *It's Your Choice*. Teachers in Oakland, San Francisco, Sacramento and Nevada County field tested the final version of *It's Your Choice*. Strategies for training California teachers to use *It's Your Choice* are being reviewed by the Dissemination Advisory Committee. Following are some of the many individuals who contributed to the final development of *It's Your Choice* during the 1982-1983 school year.

## 1982-1983 Dissemination Advisory Committee

Shirley Holder Hazlett, It's Your Choice
Patricia Hill, California State Department of Education
Geoff Link, San Francisco Study Center/ Community Graphics
Kathleen Middleton, National Center for Health Education
Ed Nathan, Zellerbach Family Fund

## 1982-1983 Curriculum Review Team

Molly Austin, R.N., American Heart Association, California
Ruth Beard, M.S.W., Director, It's Your Choice, Oakland
Robert Benjamin, M.D., Communicable Disease Bureau
Rebecca Donatelle, Ph.D., University of Kansas
Lucy Ann Geiselman, Ph.D., Zellerbach Family Fund
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Ric Loya, California Association of School Health Educators (C.A.S.H.E.)
Kathleen Middleton, National Center for Health Education
Cynthia Morrison, Hypertension Program, State of California
Judith Scheer, Ed.D., Health Educator
Mike Smith, California Association for Health, Physical Education, Recreation and Dance

## 1982-1983 Teachers Who Completed Field Testing

*Nevada County Schools/Districts*
Marge Chamberlain, Clear Creek School District
Brian Dowling, Mt. St. Mary's School
Bill Heck, Union Hill School District
Dave Huntsinger, Magnolia School
Bill Kelly, Lyman Gilmore School
Chris King, Ready Springs School
Bill Lundin, Chicago Park School
Pete Milano, San Juan Ridge School

*Oakland Unified School District*
Ashlee Sherman, Oakland Technical High School
L. Smith, Skyline High School
Linda Tague, Castlemont High School

*Sacramento Unified School District*
Roger Corey, J.F. Kennedy High School
Candy Koropp, Luther Burbank High School
Dal Shafer, C.K. McClatchy High School

*San Francisco Unified School District*
Eugene Dillon, A.P. Giannini Middle School
Emma Jones, Aptos Middle School
Dorothy Lee, Herbert Hoover Middle School
Ed Lehman, James Lick Middle School
Kendra Schmidt, Presidio Middle School

Those who worked with the first version of *It's Your Choice* during some phase of its development include:

### Advisory Committee Members and Staff

Ruth Beard, M.S.W. (staff)
Phil Bellman
Robert Benjamin, M.D.
Cheryl Fabio (staff)
Emma Ford
Frederick Fosten, M.D.
Reginald Gipson, M.D.
Daniel Goodrich, M.D.
Jovine Hankins, P.H.N.
Shirley Holder Hazlett, Ph.D. (staff)
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Cathy McDonald, M.D.
Janet Morgan, M.P.H.
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Martin Abrams
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Maud Finley
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Shirley Leonard
Bobera Lewis
Nile Runge
Barbara Stewart
Yvonne Hill Willis
Mary Tomcynk
Joan McEvoy

### School Nurses

Ruby Darrough, R.N.
Bernice Griffin, R.N.
Eva Hornsby, R.N.
Ida Miller, R.N.
Susan Sockol, R.N.
Danette Werner, R.N.

### School Administrators

Don Homstedt
Dorothy Spann, Ph.D.
Mary T. Williams
Winston Williams

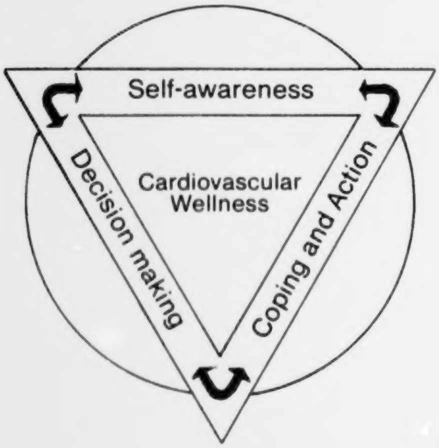
# Description of Program

*It's Your Choice* is designed to help high school students develop a lifestyle that promotes cardiovascular and overall health. The program was successfully field tested in eighth, ninth, tenth and eleventh grade classes and can be used as an introductory health education program with students in any of those grades. Although the focus of the program is cardiovascular health, the activities included are intended to promote total health and wellness.

*It's Your Choice*, composed of a curriculum guide and classroom materials, is designed to fit into a comprehensive health education program. The learning opportunities fit logically into the following content areas often included in comprehensive health education programs: disease prevention, nutrition, mental health, substance abuse, fitness and community health. In addition, a consumer health theme runs throughout the program.

*It's Your Choice* also offers school districts a way to meet the broad multi-disciplinary goals and content area objectives related to cardiovascular health in the *Health Instruction Framework for California Public Schools*, published by the California State Department of Education.

As indicated in the *Framework*, the multi-disciplinary goals are to create growth in self-awareness, effective decision making, and responsible interaction in resolving problems or coping. Students who participate in *It's Your Choice* are encouraged to identify personal habits that increase or decrease cardiovascular wellness, identify positive health changes they can and will make, and act on their decision to make positive lifestyle changes. The logo, adapted from that in the *Framework*, illustrates these concepts:



California's *Framework* and the Oakland Unified School District's *Health Matrix*, which was based on the *Framework*, served as a basis for selecting the student learning objectives in the *It's Your Choice* curriculum that would lead to attaining the multi-disciplinary goals.

This comprehensive cardiovascular program's objectives focus on the following content areas: exercise, weight control, nutrition, use of tobacco, stress management, consumerism and blood pressure monitoring. The sequence of topics and their related objectives are outlined in the following section.

# Topics and Student Learning Objectives

## Unit I: Cardiovascular Health

The student will:
- Explain personal responsibility for maintaining cardiovascular health
- Describe the potential relationship between daily health choices and cardiovascular health
- Differentiate between inherited cardiovascular factors and those based on lifestyle

## Unit II: Blood Pressure

The student will:
- Differentiate between normal blood pressure and high blood pressure
- Describe the importance of monitoring personal blood pressure

## Unit III: Exercise

The student will:
- Describe health benefits of physical fitness
- Analyze the effectiveness of personal exercise habits

## Unit IV: Sodium

The student will:
- Explain the effect of sodium on the cardiovascular system
- Describe personal use of foods containing sodium

## Unit V: Saturated Fat and Cholesterol

The student will:
- Explain the effect of saturated fat and cholesterol on the cardiovascular system
- Describe personal use of foods containing saturated fat and cholesterol

## Unit VI: Body Fitness

The student will:
- Describe a process for predicting caloric needs
- Explain the effect of obesity on the cardiovascular system
- Differentiate between internal and external eating cues

## Unit VII: Tobacco Use

The student will:
- Describe the short-term and long-term effects of tobacco on the body
- Describe why people use tobacco
- Predict the possible effects of personal tobacco use

## Unit VIII: Stress Management

The student will:
- Describe the physiological effects of stress on the body
- Identify sources of personal stress
- Analyze stress management techniques

## Unit IX: Total Cardiovascular Self-Assessment

The student will:
- Contrast positive personal behaviors that contribute to cardiovascular health with negative behaviors that contribute to cardiovascular disease
- Identify ways to personally promote cardiovascular health

# Program Overview

| Unit | Topic | Learning Opportunities | Approximate Number of 50-Minute Periods |
|---|---|---|---|
| I | Cardiovascular Health | Lifestyle, Heredity and Cardiovascular Risk Factors | 1 |
| II | Blood Pressure | Normal and High Blood Pressure: How Is It Monitored?<br>Blood Pressure Self-Assessment | 1-2 |
| III | Exercise | Exercise Critique: Aerobic or Anaerobic | 1-2 |
| IV | Sodium | Sodium and Cardiovascular Health<br>Sodium Self-Assessment | 1-2 |
| V | Saturated Fats and Cholesterol | Foods High in Saturated Fats and Cholesterol<br>Saturated Fats and Cholesterol Self-Assessment | 1-2 |
| VI | Body Fitness | Body Fitness and Cardiovascular Health<br>Body Fitness Self-Assessment | 1-2 |
| VII | Tobacco Use | Health Secret of the Universe<br>Tobacco Use Self-Assessment | 1-2 |
| VIII | Stress Management | Cardiovascular Effects of Stress<br>Stress Management Self-Assessment | 1-2 |
| IX | Total Cardiovascular Self-Assessment | Action Plan for a Healthy Heart | 1 |

# Guidelines for Using It's Your Choice

The first section of the Teaching Handbook includes and expands information presented at the inservice session for *It's Your Choice*. Teachers are encouraged to review the following sections before offering the program to their students: Description of Program, Topics and Related Student Learning Objectives, and Guidelines for Using *It's Your Choice*. This handbook also includes a health review for teachers, a pre- and post-examination for students, the actual student lessons and teaching aids, and optional related reading materials for teachers, parents and students. Familiarity with the approach, sequence and content of the program will enhance teaching effectiveness.

Information about cardiovascular disease and health is continually changing as new facts surface. The Health Review for Teachers is intentionally brief. Individuals who teach this program should try to keep current on concepts related to cardiovascular wellness.

*It's Your Choice* includes nine units, each focusing on a particular topic. The previous Program Overview lists the sequence of topics, titles of individual learning opportunities, and the approximate number of class periods in which each lesson can be presented. Teachers are encouraged, however, to present each learning opportunity in the number of class sessions that seems appropriate for their students.

*It's Your Choice* can be presented in approximately 15 class sessions. During the field testing, some teachers presented the program in as few as 10 sessions and as many as 20 sessions. These presentations may be consecutive or spaced throughout a semester health course. When spaced throughout a semester, each Learning Opportunity can be used to introduce its specific content area. For example, the exercise unit could be presented during one or two class sessions. Used in this way, *It's Your Choice* is a basic part of a comprehensive health education program.

### Teacher Checkpoints

Each unit contains a Teacher Checkpoint designed to help the teacher check student understanding of each Learning Opportunity. The checkpoint identifies key concepts related to the student objectives. Through classroom discussion or a teacher-designed quiz, teachers should determine if students have a clear understanding of key concepts and have met the student learning objectives. At this point, the teacher may choose to review terms or concepts unclear to students or expand to other activities contained in the Additional Considerations section. Items on the student examination will be directly related, but not limited to, the concepts and terms included in each Teacher Checkpoint.

### Student Handouts and Transparency Masters

Masters for student handouts and transparencies appear in the unit in which they are first used. A list of all the masters follows. The "At a Glance" page that introduces each unit re-lists the masters and identifies the number of copies required for each unit.

**Note:** The guidelines in this *Handbook* are for typical, healthy adolescents. Youths with physical limitations or restrictions should follow their physician's recommendations, which may differ from those of the *Handbook*.

# Student Handouts and Transparency Masters

| Unit | Title | Code |
|---|---|---|
| I | Cardiovascular Health Self-Assessment | SH-I* |
| | Character Sketches | SH-I.1 |
| II | The Cardiovascular System | TM-II |
| | Blood Pressure Crossword Puzzle | SH-II |
| III | Aerobic and Non-Aerobic Exercise | TM-III |
| IV | Approximate Sodium, Cholesterol and Fat Content of Some Foods | SH-IV |
| V | Fatty Acids and Lipids in Dietary Fats | TM-V |
| VI | Body Fitness Is Related to Cardiovascular Health in Many Ways | TM-VI |
| | Approximate Desirable Weights for 15-Year-Olds to 18-Year-Olds | TM-V.1 |
| | Calculate Your Caloric Needs | SH-VI |
| | Body Fitness for 14-Year-Olds to 18-Year-Olds (Optional) | SH-VI.1 |
| VII | Tobacco Use | None |
| VIII | Stress Responses and Management | TM-VIII |
| | Potentially Stressful Events for Adolescents | TM-VIII.1 |
| IX | Estimating Blood Pressure and Blood Cholesterol—Men | TM-IX |
| | Estimating Blood Pressure and Blood Cholesterol—Women | TM-IX.1 |
| | Cardiovascular Health Tips: | |
| | Some Ways to Exercise Your Heart | SH-IX.1 |
| | Some Ways to Limit Saturated Fats and Cholesterol | SH-IX.2 |
| | Some Ways to Limit Sodium (Salt) | SH-IX.3 |
| | Some Ways to Control Your Weight | SH-IX.4 |
| | Some Ways to Stop Using Tobacco | SH-IX.5 |
| | Some Ways to Manage Stress | SH-IX.6 |

**Key to Code** SH: Student Handout
TM: Transparency Master

*The Cardiovascular Health Self-Assessment is used with all nine units.

## Additional Considerations

The Additional Considerations section may be used to extend each unit. The questions in these sections expand the concepts first introduced in the student learning objectives and can be used for classroom discussion topics, in-class essay themes, extra credit or homework assignments. Based on student needs, teachers may use different Additional Considerations with different classes.

Consumer issues directly affect cardiovascular health. The ability to analyze advertisements, decipher ingredient labels on foods and identify accurate sources of new information are directly related to individuals' ability to maintain and promote their cardiovascular health. Each Additional Considerations section contains one or more consumer health issues related to the unit topic.

## Books and Brochures About Cardiovascular Health

The appendix contains a variety of related books and brochures that teachers may refer to for additional information, or students may use as reference materials to conduct independent research on a particular aspect of cardiovascular health. Parents also may find these books or pamphlets useful sources of information. The brochures may be ordered from individual suppliers and incorporated into student lessons or distributed to parents.

Inquiries about *It's Your Choice* should be directed to:

Shirley Holder Hazlett, Ph.D., Project Director
It's Your Choice
School Health Program
California Department of Education
721 Capitol Mall, 3rd Floor
Sacramento, CA 95814
(916) 322-5420

# AT A GLANCE

# UNIT I

## Cardiovascular Health

### OBJECTIVES

The student will:

- Explain personal responsibility for maintaining cardiovascular health
- Describe the relationship between daily health choices and future cardiovascular health
- Differentiate between inherited cardiovascular risk factors and those based on lifestyle

### TEACHING TIME

One period

### LEARNING OPPORTUNITY

Lifestyle, Heredity and Cardiovascular Risk Factors

### TRANSPARENCY MASTERS

None

### STUDENT HANDOUTS

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Used in Units I, II, III, IV, V, VI, VII, VIII, and IX

Character Sketches (SH-I.1)

- One per each group of six to eight students

### KEY TERMS

cardiovascular
cardiovascular system
heredity
gender
lifestyle
self-assessment
risk factor

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

### Good Health: It's Your Choice

Individuals determine their health and the quality and length of their life in many ways. Many diseases are influenced by the way we live. Welders, for example, greatly increase their likelihood of developing respiratory disabilities.

Cardiovascular disease causes more deaths in the United States than all other diseases. Although some forms of cardiovascular disease are developmental (a part of body structure since birth), most forms of heart disease are influenced by lifestyle and habits.

One type of cardiovascular disease influenced by lifestyle is hypertension, also called high blood pressure. Hypertension commonly leads to heart attack, stroke and kidney disease, and is the most prevalent cardiovascular disease.

### What People Can Do

Cardiovascular disease, including hypertension, can be prevented to a great degree. A person can reduce the likelihood of developing a cardiovascular disease by:

Monitoring blood pressure
Engaging in regular aerobic type exercise
Limiting or eliminating foods high in sodium (salt), cholesterol and saturated fats
Maintaining proper weight
Avoiding use of and exposure to tobacco
Coping with stress

### Risky Habits

The term "risk factors" refers to a group of habits frequently observed in individuals who have heart disease. These habits, individually and collectively, are related to the development of cardiovascular disease. Although there is not complete agreement regarding cardiovascular risk factors, the following generally are considered to be risk factors of cardiovascular wellness:

Undetected, elevated blood pressure (hypertension)
Lack of aerobic exercise
Frequent use of foods high in sodium (salt), cholesterol and saturated fats
Obesity
Use of and exposure to tobacco
Inability to cope with and reduce stress.

### More Risks

A combination of factors, rather than any one risk factor, leads to cardiovascular disease. Eliminating one or more risk factors may reduce the chance of developing cardiovascular disease.

Primary risk factors include:

- A family history of cardiovascular disease, age and gender. These risk factors cannot be controlled, but can be considered in determining the likelihood of developing cardiovascular disease.
- Women who smoke and use contraceptive pills greatly increase their likelihood of developing cardiovascular disease.

Individuals who drink more than two ounces of alcohol daily increase their risk of developing cardiovascular problems. Although alcohol can contribute to death and disability in many ways, it is not considered a primary risk factor of heart disease.

### Diet and Heart Disease: New Information

Researchers continue to investigate possible links between the development of cardiovascular disease and the following dietary elements:

- Caffeine

  In the early 1970s, researchers erroneously reported that coffee doubles the risk of heart attack. However, when the data were re-analyzed, the culprit was found to be tobacco, not caffeine. Many coffee drinkers were also smokers, a fact not considered in the original study.

Since then, and throughout the early 1980s, most studies have concluded that there is no support for the idea that coffee or caffeine contribute to heart disease.

However, some studies have suggested a link between heavy coffee consumption and heart disease. For example, a 1982 University of Toronto study found that men and women who drank nine or more cups of coffee had 14% more cholesterol in their blood than people who averaged less than one cup daily.

Although some studies have indicated a link between coffee consumption and heart disease, most have not. Coffee is not considered a risk factor of heart disease by the American Heart Association.

- Polyunsaturated fats

It is generally recommended that Americans eat a diet low in saturated as well as polyunsaturated fats, replacing saturated fats with polyunsaturated fats as much as possible. Such a diet will contribute to the prevention of obesity. However, a diet high in polyunsaturates generally is not viewed as a risk factor of cardiovascular disease.

- Refined sugar or simple carbohydrates such as white flour or white rice

It is recommended that Americans replace refined sugar and simple carbohydrates with complex carbohydrates such as whole-grain products. A diet high in refined sugar and simple carbohydrates generally is not viewed as a risk factor of cardiovascular disease.

- Calcium and Sodium

A 1984 research report by three Oregon scientists on the possible relationship between calcium and hypertension and sodium and hypertension generated a great deal of media interest. Contrary to current medical opinion, the study indicated a low intake of sodium and a calcium deficiency contribute to hypertension. The conclusions of this single study are viewed very cautiously by both the National Heart, Lung and Blood Institute and the American Heart Association. After reviewing this study, the American Heart Association continues to recommend limiting the intake of dietary sodium and whole milk dairy products.

# UNIT I

## Lifestyle, Heredity and Cardiovascular Health

**Materials**

- Student handout, Character Sketches (SH-I.1), one for each group of six to eight students
- Cardiovascular Health Self-Assessment (SH-I) for each student (to be used for all units but Unit VIII)

**Preparation**

- Read the Health Review for Teachers, review the Learning Opportunity
- Duplicate the student handouts

# Learning Opportunity

## INTRODUCTION

## The Cardiovascular Crystal Ball

☐ *Tell your students they are participating in* It's Your Choice, *so named because the basic facts about cardiovascular disease is that actions today influence future health. In this program, they will learn about factors that increase or decrease the likeliness of having a healthy cardiovascular system. Conduct a discussion using the following questions as guidelines:*

> Have you ever heard of a forture teller who predicts your future? You will play the role of a health fortune teller in class today. As a health fortune teller, you will predict the health and physical appearance of two people, Person A and Person B, when each is 60 years old.

☐ *Help students form groups of six to eight students each. Give each group the Character Sketches handout (SH-I.1), then direct them to:*

> Make a group prediction of the appearance and general health of Person A at age 60; write predictions in the space provided on the handout.
>
> Then make a group prediction of the appearance and general health of Person B at age 60; write predictions in the space provided on the handout.
>
> Share and discuss the rationale for your group's predictions with the rest of the class.

☐ *Direct students to re-read Character Sketches, then circle each habit that promotes general health and cross out each habit that harms general health.*

☐ *Introduce the relationship of general health to cardiovascular health by bringing out the following points:*

> Many things that promote general health also promote cardiovascular health, health of

the heart and circulatory system. In turn, habits that harm the cardiovascular system typically harm general health.

Most of Person A's habits are harmful to both general and cardiovascular health. Most of Person B's habits protect both general and cardiovascular health. While it is easy to see good or bad health habits in others, it is more difficult to see them in ourselves. In the next two weeks, you will learn to be your own cardiovascular health fortune teller.

## MAIN ACTIVITY

## Will You Develop Heart Disease?

☐ *Throughout the* It's Your Choice *program, students will analyze factors related to their own health by completing a Cardiovascular Health Self-Assessment. Give each student a copy of the Self-Assessment form. Use discussion items or questions such as the following to introduce students to the form:*

The Cardiovascular Health Self-Assessment form identifies factors that increase or decrease your chance of developing cardiovascular disease, diseases of the heart and circulatory system. The form also identifies factors related to maintaining cardiovascular wellness.

What factors are related to cardiovascular wellness and disease? (Age, gender, heredity, blood pressure, exercise, cholesterol and saturated fats, sodium, obesity, stress management, use of tobacco.)

Which factors are you born with and thus unable to control? (Age, gender, heredity.)

Which factors are related to lifestyle and therefore controllable? (All the others.)

☐ *Help the students complete the age, gender and heredity columns by providing the following information:*

Each of the 14 columns contributes an approximate value to your overall cardiovascular health profile. A high score is desirable; it means high protection against cardiovascular disease.

What does a low score mean? (Low protection; high chance of developing cardiovascular disease.)

Look at the "age" column. What point value do you get for your age? (80) Circle the point value "80" in the age column, then write "80" on the line marked "your score" at the bottom of the column.

Now determine your score for gender in the same way. Circle the appropriate point value, then write your personal score for gender on the line below. In general, who receives a higher score for gender, men or women? (Women.) What does this score tell you about women compared to men? (Women are less likely to develop cardiovascular disease than men.)

Look at the "family history" column. We will discuss this factor today, but you will fill it out only after you have talked with your family members about your family's history of heart disease. Forms of cardiovascular disease include high blood pressure or hypertension, heart attack, stroke and some kidney disorders. To determine the contribution of your "family history," identify "blood" relatives who have some form of cardiovascular disease and their age. If a blood relative had heart disease and died, use the age at which he or she died. Speak with your family and identify who has (or had) heart disease and his or her age.

## CONCLUSION

## Daily Choices for Healthy Hearts

☐ *Help students identify lifestyle choices that influence cardiovascular health by directing them to study the remaining eight columns and consider questions such as these:*

What daily choices protect our cardiovascular health?

What daily choices harm our cardiovascular health?

How is cardiovascular health related to general health?

Is cardiovascular disease (heart attack, stroke, high blood pressure) preventable? (Yes, at least to some degree. Though we cannot control age, gender and family history, we can exercise control over the other factors.)

Who is responsible for cardiovascular health? (Each of us is responsible for our own cardiovascular health.)

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts well, you may want to introduce some of the Additional Considerations. Can students:*

Define the term cardiovascular?

Identify the three cardiovascular risk factors over which they have no control?

List three forms of cardiovascular disease?

Describe their family history of heart disease?

Explain how gender contributes to heart disease?

## ADDITIONAL CONSIDERATIONS

## More on Heart Health

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments:*

Why is heart disease the leading cause of death in the United States?

Has heart disease always been the leading cause of death in the United States?

What role does caffeine play in heart disease?

Addie is certain she will not develop heart disease. She has heard that proper weight is the "key" and has maintained proper weight. Is she protected against heart disease?

Alfred has heard that exercise is related to heart disease. He is avoiding all forms of exercise to give his heart a rest. Is he right?

Which advertisements in magazines encourage people to develop habits that are harmful to their hearts? (Consumer Issue)

# Character Sketches

Person A:

I am 25 years old. I use modern time-saving and effort-saving conveniences whenever possible. For example, I always take the elevator instead of the stairs, and drive my car instead of walking. I'm always in a hurry and feel under pressure to save time. I find it very relaxing to sit and smoke a cigarette. Rather than take time to fix a meal, I usually grab a cheeseburger and fries for dinner.

I think my doctor is crazy. She told me I've been gaining too much weight and that my blood pressure is a little higher each year I'm examined. But I think I'm fine. I've only been gaining three pounds a year, and a little rise in blood pressure won't hurt anyone. I feel just fine, and I'm not going to change a thing in my lifestyle.

Prediction of appearance and health at age 60: ____________________

Person B:

I am 25 years old. When I was 15, I became interested in competitive swimming. I've been swimming nearly every day since then and wouldn't give it up for anything. Swimming helps me relax and keep my weight down. I firmly believe that swimming helped me kick the smoking habit when I was a teen-ager. Smoking cigarettes seemed to shorten the distance I could swim and besides, the cigarettes were always getting wet.

When I saw my doctor last month, he said I have the body and health of a 21-year-old. My blood pressure and body weight are just right. I just laughed when the doctor asked, "What's your secret?"

Prediction of appearance and health at age 60: ____________________

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# Cardiovascular Health Self-Assessment

Age, Gender, and Family History are factors over which you have no control. A low score here, indicating low protection against heart disease, alerts you to a possible high risk of heart disease.

These remaining seven factors are controllable by you. The higher your score, the more protected you are against heart disease. The lower your score, the less you are protected against heart disease.

To determine the degree to which you are protected against heart disease, add your score for each of the three non-controllable and the seven controllable factors.

| **Age** | **Gender** | **Family History** | **Systolic Blood Pressure** | **Aerobic Exercise** | **Sodium** | **Cholesterol Saturated Fats** |
|---|---|---|---|---|---|---|
| 10 to 20 years<br>80 | | | Up to 100<br>80 | 5 - 7 times weekly 15 - 30 minutes each time<br>80 | | |
| 21 to 30 years<br>70 | Female, under 40<br>70 | No known family history of heart disease<br>70 | 101 to 120<br>70 | 3 - 4 times weekly 15 - 30 minutes each time<br>70 | Read labels. Avoid all foods with sodium. Add no salt at table or while cooking.<br>70 | Cholesterol up to 150 mg. Diet contains no animal or solid fats<br>70 |
| 31 to 40 years<br>60 | Female, 40 to 50<br>60 | One relative (over 60) with heart disease<br>60 | 121 to 140<br>60 | 2 - 3 times weekly 15 - 30 minutes each time<br>60 | Read labels. Avoid most foods with added sodium. Add no salt at table. ¼ amount when cooking<br>60 | Cholesterol 151-205 mg. Diet contains 10% animal or solid fats<br>60 |
| 41 to 50 years<br>50 | Female, over 50<br>50 | Two relatives (over 60) with heart disease<br>50 | 141 to 160<br>50 | | | Cholesterol 206-230 mg. Diet contains 20% animal or solid fats<br>50 |
| | | One relative (under 60) with heart disease<br>40 | | Once weekly 15 - 30 minutes each time<br>40 | Read labels. Avoid most foods with added sodium. Add no salt at table. Use salt when cooking.<br>40 | Cholesterol 231-255 mg. Diet contains 30% animal or solid fats<br>40 |
| | Male<br>30 | | 161 to 180<br>30 | Once monthly 15 - 30 minutes each time<br>30 | Avoid most foods with added sodium. Add limited salt at table. Use salt when cooking.<br>30 | Cholesterol 256-280 mg. Diet contains 40% animal or solid fats<br>30 |
| 51 to 60 years<br>20 | Male, stocky<br>20 | Two relatives (under 60) with heart disease<br>20 | 181 to 200<br>20 | | Avoid some foods high in sodium. Cook with salt. Add salt at table.<br>20 | |
| 61 to 70 years<br>10 | Male, bald and stocky<br>10 | Three relatives (under 60) with heart disease<br>10 | Over 200<br>10 | Complete lack of aerobic exercise<br>10 | Cook with salt. Add salt at table. Eat foods high in sodium.<br>10 | Cholesterol 281-330 mg. Diet contains 50% animal or solid fats<br>10 |
| ______ | ______ | ______ | ______ | ______ | ______ | ______ |

**(YOUR SCORE)**

SH-I

# Cardiovascular Health Self-Assessment

**Use of Tobacco**

| | |
|---|---|
| Non-tobacco user | 100 |
| Former tobacco user | 80 |
| Cigar and/or pipe smoker or 1 to 10 cigarettes daily | 50 |
| 11 to 19 cigarettes daily or chew tobacco infrequently | 40 |
| 20 to 29 cigarettes daily or chew tobacco moderately | 30 |
| 30 to 39 cigarettes daily or chew tobacco frequently | 20 |
| 40 or more cigarettes daily or chew tobacco very frequently | 10 |

**Body Fitness**

| | |
|---|---|
| More than 5 lbs. below standard weight (Note: Extreme thinness can be harmful.) | 70 |
| Standard weight ± 5 lbs. | 60 |
| 5 - 20 lbs. overweight | 50 |
| 21 - 35 lbs. overweight | 40 |
| 36 - 50 lbs. overweight | 20 |
| 51 - 65 lbs. overweight | 10 |

**Stress Management**

| | |
|---|---|
| Identify personal stress and practice stress management daily | 70 |
| Identify personal stress and practice stress management 5-6 days | 60 |
| Identify personal stress and practice stress management 3-4 days a week | 50 |
| Identify personal stress and practice stress management 1-2 days a week | 30 |
| Identify personal stress but never practice stress management | 20 |
| Cannot identify personal stress and never practice stress management | 10 |

**Determine your Total Score.**
Decide how you can improve your cardiovascular health. Recalculate your Total Score at three future times. Did you improve? Remember, Cardiovascular Health is your choice.

Approximate Protection Against Heart Disease

| | |
|---|---|
| High: | 650 to 760 |
| Moderate/High: | 530 to 640 |
| Moderate: | 420 to 520 |
| Low/Moderate: | 270 to 410 |
| Low: | 90 to 260 |

You can increase or decrease your protection against heart disease by the way in which you live your life. The choices you make about smoking, nutrition, exercise and other habits directly influence your cardiovascular health.

Name: ______________________

Class: ______________________

Period: ______________________

| Date/Score | Date/Score | Date/Score |
|---|---|---|
| | | |

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## AT A GLANCE

## UNIT II

# Blood Pressure

### OBJECTIVES

The student will:

- Differentiate between normal blood pressure and high blood pressure
- Describe the importance of monitoring personal blood pressure

### TEACHING TIME

One to two periods

### LEARNING OPPORTUNITIES

Blood Pressure: How Is It Monitored?
Blood Pressure Self-Assessment

### TRANSPARENCY MASTER

The Cardiovascular System (TM-II)

### STUDENT HANDOUTS

Blood Pressure Crossword Puzzle (SH-II)

- One per student

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Distributed during Unit I

### KEY TERMS

blood pressure
stethoscope
risk factor
sphygmomanometer
symptoms
hypertension
arteries
high blood pressure
normal blood pressure
systolic
diastolic

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

## Blood Pressure and Healthy Hearts

The cardiovascular system comprises the heart and all the blood vessels in the body — arteries, veins and capillaries.

*Arteries* carry oxygen-rich blood away from the heart to all parts of the body. Since blood pumps through the arteries with great force, the arteries are muscular and elastic.

*Veins* return blood from which oxygen has been removed; the heart then pumps blood to the lungs where it is replenished with oxygen.

*Capillaries* are the bridges between the veins and arteries. The walls of capillaries are thin, allowing blood to nourish cells next to the capillaries and remove waste products.

*Blood pressure* is the force of the blood against the arteries. It is measured by taking both an upper (systolic) and lower (diastolic) reading.

*Systolic* pressure is a measure of the pressure in the arteries each time the heart beats.

*Diastolic* pressure represents the pressure remaining in the arteries between heart beats.

## Getting an Accurate Reading of Blood Pressure

Blood pressure readings, taken by trained personnel using a sphygmomanometer (blood pressure cuff) and stethoscope, indicate whether blood pressure is within the normal or high range. Normal blood pressure is typically 120 systolic and 80 diastolic; this is written 120/80 and is read "one hundred twenty over eighty." Normal blood pressure may be lower than 120/80.

In a teen-ager, high blood pressure is indicated by a reading which is repeatedly at least 140/90.

Because many emotions and environmental factors can temporarily elevate blood pressure,a single high reading does not indicate hypertension (high blood pressure). Blood pressure measuring machines, found in supermarkets or shopping centers, frequently give false high readings; the machines may be miscalibrated, or more frequently, the environment may not be conducive to a proper reading.

A person who has a single high reading should have a second and perhaps a third reading taken by qualified personnel in a clinic, doctor's office or other medical setting.

## Hypertension: The "Silent Killer"

Although blood pressure commonly increases with age, individuals of any age can have hypertension. Among Americans, 1% to 2% of teen-agers and up to 20% of college students have blood pressure high enough to shorten their lives.

Hypertension usually causes no symptoms during the early stages, so many cases go unnoticed. That is why it is considered a "silent killer" — no symptoms are noticed until a fatal heart attack or stroke occurs.

Hypertension can be detected early through regular blood pressure checks by qualified personnel. Elevated blood pressure then can be controlled through positive changes in lifestyle and/or medical management.

# UNIT IIA

**Materials**

- Film, "High Blood Pressure: What It Is, What It Can Do to You" (6½ minutes, available from the American Heart Association), movie projector and screen
- Overhead projector, transparency master, The Cardiovascular System (TM-II)
- Student handout, Blood Pressure Crossword Puzzle (SH-II) for each student, Answer Key to Crossword Puzzle to be posted in class
- Sphygmomanometer (optional), stethoscope (optional)

**Preparation**

- Read the Health Review for Teachers, review the Learning Opportunity
- Order film from local chapter/division of the American Heart Association. (If the film is not available, present a mini-lecture that helps students differentiate between normal and high blood pressure. Information in the transcript of the film, Learning Opportunity discussion questions and Health Review may be incorporated into the mini-lecture. The transparency, the Cardiovascular System, can be used as a visual aid. Students can complete the Blood Pressure Crossword Puzzle after listening to the mini-lecture.)
- Read transcript of film; note place at which to stop showing the film. If possible, preview film; practice stopping film at appropriate place.
- Duplicate copy of Blood Pressure Crossword Puzzle (SH-II) for each student
- Identify local clinics and public health agencies where blood pressure can be checked
- Prepare transparency of The Cardiovascular System (TM-II)

When *It's Your Choice* was first used as a curriculum, a team of school nurses took blood pressure readings of students in the program. These readings, which were taken in the classroom, yielded a high proportion of false high readings. In an attempt to avoid mislabeling adolescents as hypertensive, the screening component was eliminated from the program. Instead, students are encouraged to have their blood pressure read in an appropriate setting such as a clinic, hospital or physician's office.

If your school nurse takes blood pressure readings of students, caution students that the reading may be falsely high. Inform students that a single high reading does not indicate they have high blood pressure or hypertension.

It generally is agreed that a repeated blood pressure reading of 140/90 indicates high blood pressure in a teen-ager. However, hypertension can be of a systolic (145/80) or diastolic (130/96) nature. Although these forms of hypertension can be serious, they are not specifically addressed in this curriculum.

# Learning Opportunity

## INTRODUCTION

## High Blood Pressure Risks

☐ *Prepare students to view the film, "High Blood Pressure: What It Is, What It Can Do to You."*

You will be seeing a short film about normal and high blood pressure. High blood pressure, also known as hypertension, is a risk factor of cardiovascular health.

While watching the film, listen for and try to define the terms listed on the board. Write these terms and viewing notes on a sheet of paper.

**TERMS**

sphygmomanometer
systolic
arteries
blood pressure
diastolic
symptoms of early high blood pressure

## MAIN ACTIVITY

## Regular Checks Protect Heart

☐ *Show film, "High Blood Pressure: What It Is." Use questions such as the following for lecture or discussion following the film:*

What is a sphygmomanometer and how is it used? (Blood pressure cuff, wrapped around upper arm and used with a stethoscope to measure blood pressure.)

Which of you has had your blood pressure taken and know your blood pressure?

What forms your blood pressure? (Force of blood against the arteries.)

☐ *Project overhead The Cardiovascular System (TM-II) transparency. Refer to the projected image while you discuss the following:*

What is systolic blood pressure? (Force of blood against arteries when the heart contracts; this is the higher number in a blood pressure reading.)

What is diastolic blood pressure? (Force of blood against the arteries when the heart rests between contractions; this is the lower number in a blood pressure reading.)

What are arteries? (Blood vessels that carry blood away from the heart; basic problem with blood pressure is in the arteries.)

Why are arteries more muscular than veins? (Blood presses with great force against the arteries, with less force against the veins. Arteries carry blood away from the heart. Veins carry blood to the heart.)

What are the symptoms of early high blood pressure? (There are no symptoms of early high blood pressure; the only way to know your blood pressure is by having it measured.)

What would a blood pressure reading of 120/80 mean? (The systolic or higher pressure is 120 and the diastolic or lower pressure is 80; this would be a normal reading for a teen-ager or young adult.) (Note: As you discuss this question, write the following on the board:)

$$\frac{\text{SYSTOLIC}}{\text{DIASTOLIC}} \quad \frac{120}{80} \quad \text{Within Normal Range}$$

The film indicated that a normal reading can be 130/80. That also is correct. A normal reading for a teen-ager can be 130/80 or lower, perhaps 120/80 or less. (Note: As you discuss this question, write the following on the board:)

$$\frac{\text{SYSTOLIC}}{\text{DIASTOLIC}} \quad \frac{130}{80} \quad \text{Within Normal Range}$$

High blood pressure, hypertension, is a reading that is repeatedly at least 140/90 for a teen-ager. (Note: As you discuss this question, write the following on the board:)

$$\frac{\text{SYSTOLIC}}{\text{DIASTOLIC}} \quad \frac{140}{90} \quad \text{High Blood Pressure Reading}$$

However, a reading slightly lower than this, perhaps 135/85, may be considered high for some teen-agers. An individual's physician will assess whether that person has blood pressure within the normal, borderline high or high range.

If you have your blood pressure read once and it is 140/90, do you have high blood pressure? (Maybe or maybe not. Many emotions or environmental factors can cause blood pressure to be temporarily high. A blood pressure reading should be taken a second and third time.)

Why should people of all ages regularly have their blood pressure checked? (People of any age can have high blood pressure. Hypertension is a risk factor of heart disease that can go unnoticed until a heart attack occurs. When detected early, high blood pressure can be controlled through lifestyle and/or medication, and a heart attack usually prevented.)

Why is hypertension called a silent killer? (People may have high blood pressure for years without a sign. The first symptom may be a fatal heart attack.)

Where can you have your blood pressure checked? (Note: After students identify sources, inform them of community sources you have identified.)

Whenever your blood pressure is measured, ask the health specialist to tell you the reading. Record the reading and date on a note card and keep it as a record; add additional readings and dates to the card.

## CONCLUSION

## Key Blood Pressure Terms

☐ *Give each student a copy of the Blood Pressure Crossword Puzzle. Instruct them to do the following:*

Complete the puzzle individually, in pairs or in small groups.

Compare answers to the Answer Sheet to Crossword Puzzle that can be posted in class or read aloud.

Discuss questions that are difficult to answer.

☐ *For variety, ask students to complete the crossword puzzle as a homework assignment or students can be provided with a list of terms used in the crossword puzzle. The following words can be written on the board:*

arteries
blood pressure
brain
checked
controls
diastolic
heart
high
hypertension
kidneys
killer
normal
repeated
risk
sphygmomanometer
stethoscope
symptoms
system
systolic

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts, you may want to introduce some of the Additional Considerations.*

Can students define the terms hypertension, sphygmomanometer, blood pressure, systolic, diastolic, normal blood pressure and high blood pressure?

Do students understand that hypertension may be unsymptomatic during the early stages, which may last for years?

Do students know how to detect high blood presssure?

## ADDITIONAL CONSIDERATIONS

## More on Blood Pressure

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

What would you do if you found out you had high blood pressure?

If both your mother and your father have high blood pressure, can you be certain that you will develop high blood pressure?

Your friend says a red face and frequent headaches are early signs of high blood pressure. Is he right? Why or why not?

Why might a person not have his or her blood pressure taken?

Is a blood pressure reading determined by a machine in a supermarket or drug store reliable? Why or why not? (Consumer Issue)

Mable is concerned about her blood pressure. She is saving her babysitting money to buy a $20 blood pressure cuff and stethoscope at the local drug store. Will this be a reliable way for Mable to check her blood pressure? Why or why not? (Consumer Issue)

# UNIT IIB

## Blood Pressure Self-Assessment

**Materials**

- Student handout, Cardiovascular Health Self Assessment (SH-I), for each student

**Preparation**

- Review the Health Review for Teachers and the Learning Opportunity
- Identify no-cost or low-cost clinics that take blood pressure readings

# Learning Opportunity

## INTRODUCTION Getting Pressure Read

☐ *Prepare students to complete the blood pressure portion of the Self-Assessment:*

Take out your Cardiovascular Health Self-Assessment form and look at the blood pressure reading, circle the box that applies to you.

Have your blood pressure taken within a week if you do not know your blood pressure. After you have learned your blood pressure reading, circle the box that applies to you.

☐ *You may recommend several no-cost or low-cost clinics where trained professionals take blood pressure readings. Your local chapter/division of the American Heart Association may help identify resources in your community.*

## CONCLUSION Keeping Blood Pressure Down

☐ *Conduct a discussion using the following questions as guidelines:*

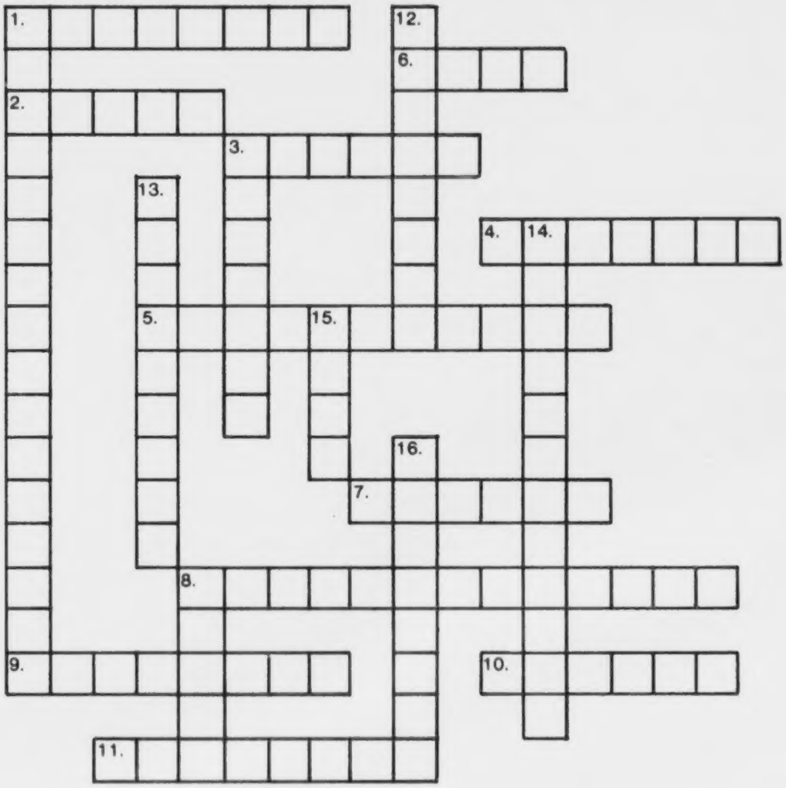
What things might you do if you have a single blood pressure reading that indicates high blood pressure?

Imagine your physician tells you that you have borderline high or high blood pressure. What changes can you make in your lifestyle that may help reduce your blood pressure?

Identify obstacles to getting your blood pressure checked regularly. How might those obstacles be overcome?

SH-II

# Blood Pressure Crossword Puzzle



**Across**

1. Each time the heart beats, blood presses against the wall of the arteries, forming __________ pressure.
2. Untreated, uncontrolled hypertension can lead to a __________ attack.
3. Hypertension is often called the "silent _______."
4. The only way to detect hypertension is to have your blood pressure regularly __________.
5. When they check your blood pressure, a physician or a nurse uses a __________ to listen to your heart.
6. Hypertension is one __________ factor of heart disease.
7. The heart and blood vessels form the cardiovascular __________.
8. The force of blood against the wall of the arteries is called __________.
9. A __________ elevated blood pressure reading is an indication of the disease hypertension.
10. A blood pressure reading of 120/80 is not high, it is __________.
11. An individual who __________ blood pressure through lifestyle reduces the risk of developing cardiovascular disease.

**Down**

1. Another term for the medical cuff used to measure blood pressure is __________.
3. Undetected, uncontrolled high blood pressure can affect the brain, heart, or __________.
8. Undetected, uncontrolled hypertension can lead to a stroke, which is an injury of the __________.
12. Blood vessels that carry blood away from the heart are __________.
13. The pressure remaining in the arteries between heartbeats is __________ pressure.
14. The medical term for high blood pressure is __________.
15. If a 16-year-old's blood pressure is repeatedly 135/85, he or she has __________ blood pressure.
16. Early high blood pressure has no __________.

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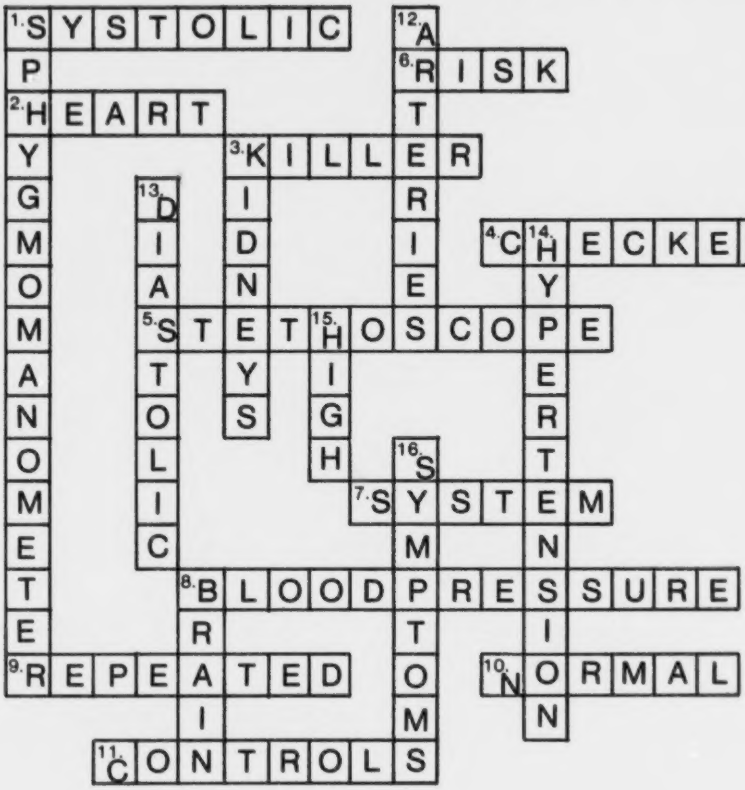
SH-II

# Blood Pressure Crossword Puzzle


1. SYSTOLIC
12. ARTERIES
6. RISK
2. HEART
3. KILLER
3. KIDNEYS
13. DIASTOLIC
4. CHECKED
14. HYPERTENSION
5. STETHOSCOPE
15. HIGH
16. SYMPTOMS
7. SYSTEM
8. BLOOD PRESSURE
8. BRAIN
9. REPEATED
10. NORMAL
11. CONTROLS
1. SPHYGMOMANOMETER

**Across**

1. Each time the heart beats, blood presses against the wall of the arteries, forming __________ pressure.
2. Untreated, uncontrolled hypertension can lead to a __________ attack.
3. Hypertension is often called the "silent ______."
4. The only way to detect hypertension is to have your blood pressure regularly __________.
5. When they check your blood pressure, a physician or a nurse uses a __________ to listen to your heart.
6. Hypertension is one __________ factor of heart disease.
7. The heart and blood vessels form the cardiovascular __________.
8. The force of blood against the wall of the arteries is called __________.
9. A __________ elevated blood pressure reading is an indication of the disease hypertension.
10. A blood pressure reading of 120/80 is not high, it is __________.
11. An individual who __________ blood pressure through lifestyle reduces the risk of developing cardiovascular disease.

**Down**

1. Another term for the medical cuff used to measure blood pressure is __________.
3. Undetected, uncontrolled high blood pressure can affect the brain, heart, or __________.
8. Undetected, uncontrolled hypertension can lead to a stroke, which is an injury of the __________.
12. Blood vessels that carry blood away from the heart are __________.
13. The pressure remaining in the arteries between heartbeats is __________ pressure.
14. The medical term for high blood pressure is __________.
15. If a 16-year-old's blood pressure is repeatedly 135/85, he or she has __________ blood pressure.
16. Early high blood pressure has no __________.

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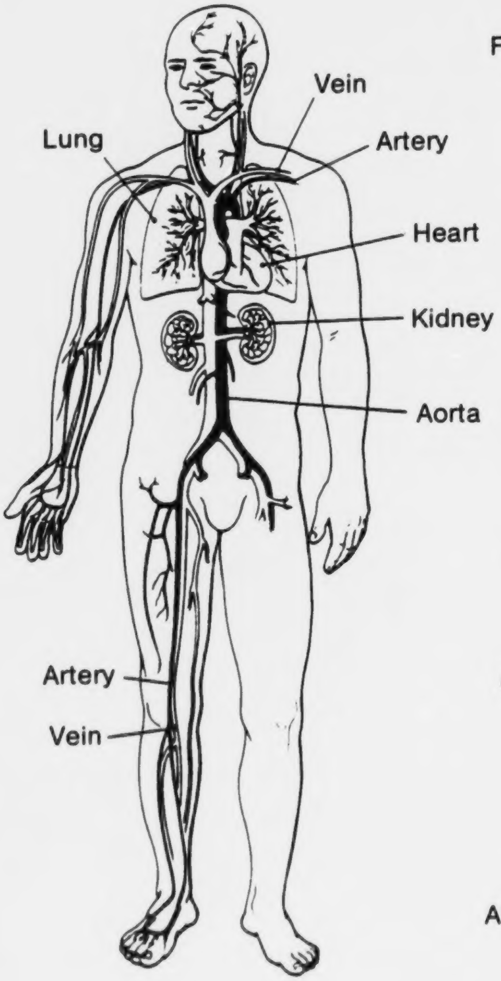
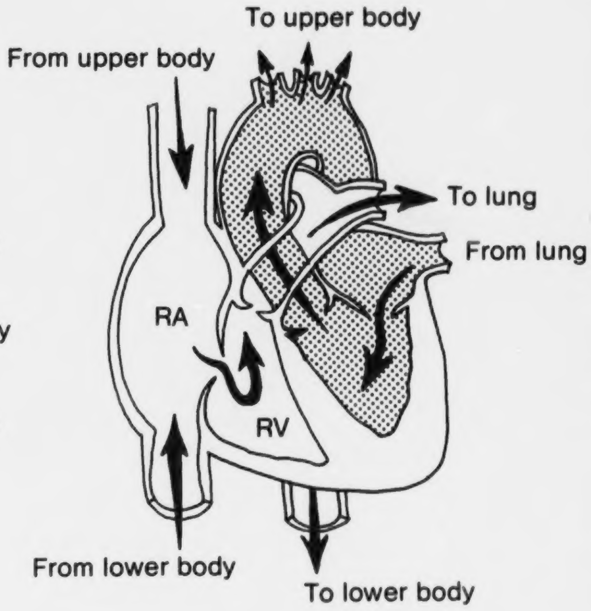
TM-II

# The Cardiovascular System

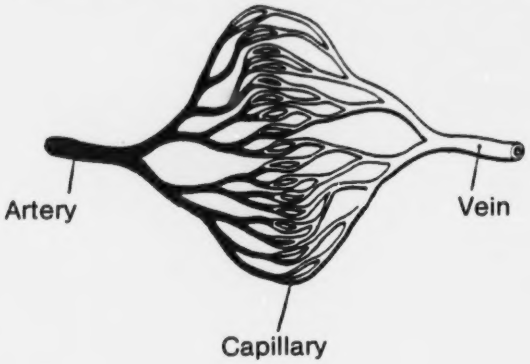
## CARDIOVASCULAR SYSTEM


Vein
Lung
Artery
Heart
Kidney
Aorta
Artery
Vein

## CIRCULATION THROUGH HEART


To upper body
From upper body
To lung
From lung
RA
RV
From lower body
To lower body

## ARTERY-CAPILLARY-VEIN CIRCULATION


Artery
Vein
Capillary

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Illustrations adapted from *The Heart Risk Book*, Bantam, New York, 1982.

# "High Blood Pressure: What It Is, What It Can Do To You"

**Transcript of Film Script**

**Narrator:**

Perhaps your blood pressure is normal: perhaps you have high blood pressure: it's important to know. Doctors still have much to learn about this strange, silent disease that affects millions of people throughout the world, but there is much today that is known and much that can be done to control it. The instrument used to measure blood pressure is called a sphygmomanometer; it measures the pressure under which your blood circulates. This circulation is kept in motion by the toughest, strongest muscle in your body, your heart, which beats more than 100,000 times a day, pumping blood through the arteries in your body. This blood stream supplies the essential oxygen and nutrients which sustain your life. In the arteries, the flowing blood exerts force against the arteriole walls: blood pressure.

Each time the heart contracts, the pressure increases. When the heart relaxes between beats, the pressure is released. With a sphygmomanometer, your doctor measures two pressures: systolic, which represents the force when the heart contracts; and diastolic, when the heart relaxes and the pressure falls. Systolic. Diastolic. Systolic. Diastolic. Both levels are important for diagnosis. The doctor records both maximum and minimum. For example, 130 over 80 would be normal. The arteries through which the blood flows vary in size, from large ones near the heart to smaller branches throughout the body where nourishment is brought to the tissues.

The basic problems with high blood pressure lie in these small arteries. Imagine one small artery as the nozzle of a garden hose. If the nozzle is open, the water flows freely. But if the nozzle is narrowed, the pressure inside the hose builds up. The small arteries act much like nozzles, causing the heart to work harder to force the flow of blood through these narrow passages.

Normally blood pressure fluctuates throughout the day. Various emotions also cause pressure to rise; but emotions, like physical activity, are temporary and usually the pressure drops back to normal.

But if, for many reasons, your blood pressure goes up and stays up, you have high blood pressure. Over a period of years, constant high blood pressure can lead to kidney failure, heart attack and stroke. What are the symptoms? The fact is most people with early high blood pressure have no symptoms at all. Dizziness, shortness of breath, spots before the eyes, blurred vision, a flushed face or pounding headaches: none of these are symptoms of early high blood pressure. The only way to tell is to have your blood pressure checked.

How does high blood pressure make people sick? For one thing, the continued narrowing at the small arteries may cause the heart to work harder, so that the muscles in the wall of the heart grow larger and stronger at first. But if the heart continues to enlarge, the muscle fiber may become over-stretched and weak, so that the heart cannot function properly. Another effect is on the kidney, where the blood vessels can become so narrow and diseased that kidney function fails. High blood pressure can also cause disease of the large arteries. Through the years, these arteries can grow rough, hard and thick, losing their elasticity, or become narrowed by localized collections of scar tissue and fat. Sometimes a clot will form in an artery. If this artery is supplying blood to the heart — the result may be a heart attack. If the artery is supplying blood to the brain — a stroke. Or to the leg —gangrene.*

What causes high blood pressure? In most cases, nobody knows. Body chemistry may have something to do with it, or too much salt in your diet. Heredity could be a factor, or being overweight. And continuing emotional stress may contribute.

**Comments By Woman Physician:**

The truth is, no one is certain of the causes. But one thing is certain, most cases of high blood pressure can be controlled with proper treatment. And proper treatment, faithfully followed, will greatly reduce the damaging effects of the disease. Don't make the mistake of thinking that the height of the blood pressure alone tells how serious the disease is, or what treatment is needed. Only the doctor, after medical evaluation, can tell how high blood pressure should be treated. Most people can be helped. It may be a change in diet, or living habits, or the regular use of medication. Whatever your doctor tells you to do, do it. You may have to do it the rest of your life. The chances are, it will be a longer, healthier and happier life.

*Note to Teacher: If possible, stop the film at this point. This film was made at a time when the cause of hypertension was not clear. From this point on, the narrators de-emphasize lifestyle factors that contribute to hypertension. Given current knowledge about hypertension, this emphasis is not appropriate.

# AT A GLANCE

# UNIT III

## Exercise

### OBJECTIVE

The student will:
- Describe how physical fitness contributes to cardiovascular health
- Analyze personal exercise habits with regard to cardiovascular health

### TEACHING TIME

One period

### LEARNING OPPORTUNITIES

Exercise Critique: Aerobic or Anaerobic
Exercise Self-Assessment

### TRANSPARENCY MASTER

Aerobic and Anaerobic Exercise (TM-III)

### STUDENT HANDOUT

Cardiovascular Health Self-Assessment (SH-I)
- One per student
- Distributed during Unit I

### KEY TERMS

aerobic exercise
anaerobic exercise
resting heart rate
working heart rate

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

### Exercise: Three Boons to Health

Regular and brisk exercise, sometimes referred to as aerobic exercise, contributes to cardiovascular health in three major ways. First, the cardiovascular system itself improves. The maximum pumping capacity of the heart increases, and the heart rate at rest is slowed. (Trained athletes may have a resting heart rate of 40 to 50 beats per minute.) Endurance increases — an individual can perform physical activities for longer periods of time. In persons with hypertension, blood pressure levels are reduced.

The ability to cope with mental anxiety or stress improves with exercise, a second boon to health. Exercise can be a physical release of energy, which helps reduce stress. It also helps people relax and feel less tense, and improves their ability to fall asleep quickly and sleep well.

Finally, exercise can be a key to weight control or reduction. Exercise helps control appetite: Every 3,500 calories used in exercise results in a pound loss. For example, for a 200-pound person, a daily 1½-mile walk can result in a loss of 14 pounds in one year. Increased exercise combined with reduced caloric intake is recommended to control weight. Regular exercise also increases the levels of high density lipoproteins (HDL). High levels of HDL, a cholesterol carrying protein in the blood, has been linked to a decreased risk of coronary heart disease.

### Exercise and Heart Attacks

Compared to active people, physically inactive people have a higher risk of heart attack. Inactive people are twice as likely to have heart attacks as active people. And inactive people who have heart attacks are three times more likely to die immediately after the heart attack than active people who suffer a heart attack.

### Brisk, Sustained, Regular Exercise for Heart Health

The type of exercise that improves the condition of the cardiovascular system must meet three criteria: The exercise must be brisk, sustained and regular. Exercise improves the condition of the cardiovascular system and sometimes is referred to as aerobic exercise.

*Brisk* exercise raises the heart and breathing rates; the heart rate is raised to between 60% to 70% of its maximum.

*Sustained* exercise is done at least 15 to 30 minutes without interruption.

- Very vigorous exercises such as cross country skiing, uphill hiking, jogging, running in place, jumping rope or rowing must be done at least 15 minutes.
- Moderately vigorous exercises such as walking, bicycling, downhill skiing, basketball, calisthenics, field hockey, handball, racquetball, soccer, squash, swimming and singles tennis must be done briskly for a minimum of 30 minutes.
- The types of very vigorous and moderately vigorous sustained exercise described above are sometimes referred to as aerobic exercise.

To be considered regular, exercise should be repeated at least three times weekly. Regular exercise is best if it is spaced throughout the week. For example, it is better to exercise on Tuesday, Thursday and Saturday than on Friday, Saturday and Sunday.

Cardiovascular conditioning increases when brisk, sustained, regular exercise is practiced for a period of months or years.

### How Hard to Exercise

By keeping track of heart rate, it is possible to determine how hard one should exercise. The heart rate should be raised to from 60% to 75% of its maximum. Maximum heart rate can be easily estimated. It is approximately: 220 minus age (in years).

- For a 15 year old, the maximum heart rate would be: 220 - 15 = 205 beats per minute.
- 60% to 75% of this maximum heart rate, the optimal rate for building cardiovascular endurance, would be 123 to 153 beats per minute for a 15-year-old.

If an individual is not breathing normally within 10 minutes after exercising, that person is probably exercising too hard. Subsequent exercise sessions should be less vigorous. When exercising within the 60% to 75% range, one should be able to keep up a conversation comfortably.

Each exercise session should include:

- A five-minute warm-up period, slow, stretching exercises in a steady, rhythmical way.
- Sustained vigorous activities for 15-30 minutes at 60% to 75% of the maximum heart rate.
- A five-minute cool-down period with less vigorous activity and stretching exercises.

The principles listed above apply to healthy individuals, the vast majority of the adolescent population. However, no one with a cardiovascular condition should do strenuous exercise without checking with his or her physician.

# UNIT IIIA

## Exercise Critique: Aerobic or Anaerobic

**Materials**

- Magazine or newspaper pictures of people engaging in aerobic and anaerobic forms of exercise
- Stopwatch or watch with second hand
- Transparency master, Aerobic and Anaerobic Exercise (TM-III)

**Preparation**

- Read the Health Review for Teachers and review Learning Opportunity
- Prepare transparency
- Collect pictures of people engaging in forms of aerobic and anaerobic exercise and classify each as depicting an aerobic or anaerobic form of exercise, then divide the pictures into four to six sets; each set should contain aerobic and anaerobic forms of exercise
- Practice using stopwatch or watch with second hand and taking pulse at the carotid artery

**Options**

- Instead of using sets of pictures from magazines or the newspaper, show 35 mm slides of people participating in aerobic and anaerobic forms of exercise. The slide show then can be discussed by the entire class.
- Before presenting this lesson, ask students to bring in a magazine or newspaper picture of people engaging in forms of exercise. During the Learning Opportunity, students can classify each picture as presenting an aerobic or anaerobic form of exercise.
- Material presented in this unit can be coordinated with the students' physical education class. Students can apply working and resting pulse-taking procedures learned in this class to aerobic activities in their physical education class.

# Learning Opportunity

## INTRODUCTION

## Resting Heart Rate

☐ *Prepare students to take their resting heart rate by conducting a discussion, using the following points as guidelines:*

> Regular aerobic exercise contributes to cardiovascular fitness in many ways. For example, those who regularly jog or swim actually strengthen and condition their hearts. The strengthened heart pumps a greater amount of blood every beat and, therefore, pumps fewer times per minute.

Has anyone ever taken a reading of your pulse? By taking your pulse, you will learn your heart rate. To find out your resting heart rate, take your pulse when you are relaxed.

☐ *Direct students to take their own resting heart rate:*

Place the tips of your fingers over the carotid artery, located to the right or left of your Adam's apple. Use the fingertips of your right hand on the left side of your neck, or those of your left hand on the right side of your neck. (When you are certain everyone has found his or her pulse, move to the next step.)

☐ *Direct students to begin counting the moment you say "begin," and to stop counting the moment you say "stop."*

Take your pulse for 30 seconds and multiply by two to obtain your one-minute resting heart rate. (Note: After exercise, a working heart rate is taken by counting the number of heart beats in 10 seconds and multiplying by six.)

☐ *On the board, make a tally of the number of students in the following one-minute resting heart rate categories. Your tally will look something like this:*

| **Heartbeats in One Minute** | **Number of Students** |
|---|---|
| 30-39 | 0 |
| 40-49 | 1 |
| 50-59 | 111 |
| 60-69 | 1111 11 |
| 70-79 | 1111 1111 11 |
| 80-89 | 1111 1111 |
| 90-99 | 1111 |
| 100-109 | 1 |

☐ *Interpret the meaning of these numbers by telling students:*

A score of 70-79 indicates average cardiovascular fitness; the person is neither well nor poorly conditioned. A score above 80 indicates the heart is beating faster to pump blood. Generally, the higher over 80, the less conditioned the heart.

A score of 60-69, on the other hand, generally indicates a person is fairly well conditioned. A highly trained athlete such as a marathon runner might have a resting heart rate in the 40s or 50s. A low score is desirable because the heart is able to "rest" for a longer period of time between beats.

☐ *Direct students to take their true resting heart rate when they first awake:*

To get a more accurate reading of your resting heart rate, take your pulse when you first wake up in the morning. Your true resting heart rate will be lower, typically, than that which you took in class.

## MAIN ACTIVITY

## Best Exercise for the Heart

☐ *Introduce students to the concept that regular aerobic activity promotes cardiovascular health by discussing the following:*

Some types of physical activity lower your heart rate and promote cardiovascular health; other types do not. Exercise that conditions your heart has these characteristics:

Brisk: raises heart and breathing rates
Sustained: at least 15 to 30 minutes without interruption

Regular: at least three times per week

Brisk, sustained exercise sometimes is called aerobic exercise.

☐ *While presenting the above points, write the following on the board:*

Aerobic Exercise is: Brisk
Sustained
Regular

Aerobic exercise promotes cardiovascular health. Exercise that is not aerobic is called anaerobic exercise.

☐ *Write the following list of forms of exercise on the board. Direct students to write the list on a sheet of paper and circle forms of exercise that are aerobic (forms of aerobic exercise are circled):*

Forms of Exercise

[✓ jogging]
[✓ disco dancing]
baseball
[✓ swimming]
[✓ handball]
weight lifting

☐ *Project the transparency Aerobic and Anaerobic Exercise (TM-III) and help students correct their responses. Turn off overhead projector.*

☐ *Show or pass around pictures of people engaging in various types of exercise. Direct students individually, in small groups or as a whole class, to look at the pictures and identify forms of exercise that condition the heart. Again, project Aerobic and Anaerobic Exercise so students can check their responses.*

☐ *Help students in analyzing the information on Aerobic and Anaerobic Exercise (TM-III) by asking questions such as these:*

Why is singles tennis an aerobic form of exercise while doubles tennis is not?

Why is golf, by foot or by cart, anaerobic?

Can you identify additional forms of exercise that are aerobic? Which are anaerobic?

If you can take your resting heart rate for 30 seconds, then multiply by two, why must you take your working heart rate for 10 seconds then multiply by 6? (The reading is more accurate; a working heart noticeably recovers, rests, or slows down in 30 seconds, particularly in a trained athlete.)

If you take your working heart rate and find it is 200 beats per minute, what should you do? (Exercise less strenuously in future sessions.)

If you take your working heart rate and find it is 100 beats per minute, what should you do? (For a conditioning effect, exercise more strenuously in future sessions.)

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts well, you may want to introduce some of the Additional Considerations.*

Can students identify how aerobic exercise contributes to cardiovascular health?

Can students distinguish between types of aerobic and anaerobic exercise?

Do students know how to measure their resting heart rate? Working heart rate?

Can students predict the cardiovascular fitness of a person with a resting heart rate of 40? 60? 80? 90?

## ADDITIONAL CONSIDERATIONS

## More on Exercise

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

Which sport programs offered at your school promote cardiovascular health? Which do not promote cardiovascular health?

What are the benefits from forms of exercise or sports that do not promote cardiovascular health?

Thirteen-year-old Mary Lou has heard that aerobic exercise is good for you. However, she doesn't want to begin an exercise program because she thinks it is unfeminine and will make her look like a weight lifter. Is she right?

How might physical activity be related to stress? (Helps people relax, feel less tense; release of energy that helps you cope with stress.)

How is physical exercise related to weight control? (Exercise uses calories and helps control appetite.)

Commercial fitness centers invite individuals to join and get back into shape. Are these centers the only way to engage in aerobic exercise? Why or why not? (Consumer Issue)

Imagine that you are considering joining a fitness center. What questions might you ask to determine if its staff is trained in building cardiovascular endurance? What might you ask to determine if it provides aerobic forms of exercise, non-aerobic forms of exercise or a combination of the two? (Consumer Issue)

# UNIT IIIB

## Exercise Self-Assessment

**Materials**

- Student handout, Cardiovascular Health Self-Assessment (SH-I), for each student
- Overhead projector
- Transparency master, Aerobic and Anaerobic Exercise (TM-III), previously used in Learning Opportunity IIIA

**Preparation**

- Read the Health Review for Teachers and review the Learning Opportunity
- Identify outside or inside recreation facilities, outside exercise courses, tracks or running trails in your area
- As needed, develop transparency

# Learning Opportunity

## INTRODUCTION AND MAIN ACTIVITY

### Self-Assessment

☐ *Prepare students to complete the aerobic exercise portion of the Self-Assessment by directing them to:*

Take out your Cardiovascular Health Self-Assessment and look at the Aerobic Exercise column.

Circle the box and enter the score that applies to you. (Note: If students are not able to classify a form of exercise as aerobic or anaerobic they may refer to the overhead projection, Aerobic or Anaerobic Exercise (TM-III).

## CONCLUSION

### Getting Enough Exercise

☐ *Conduct a discussion using the following questions as guidelines:*

Do you receive an adequate amount of aerobic exercise weekly? If not, how can you increase your amount of aerobic exercise?

Although anaerobic exercise does not condition the heart, in what ways is it helpful?

Susie believes the only way she can be certain to get an adequate amount of aerobic exercise is by joining the "Aerobic Fitness Exercise Center." By saving her babysitting money, she has saved $350, enough for a six-month membership. As her friend, would you advise her to join the exercise center? Why or why not?

TM-III

# Aerobic and Anaerobic Exercise

### Aerobic (Brisk, Sustained and Regular) Exercise Conditions the Cardiovascular System

**Very Vigorous**
(15 minutes, 3 times a week)

CROSS COUNTRY SKIING
HIKING (UPHILL)
ICE HOCKEY
JOGGING
JUMPING ROPE
ROWING
RUNNING IN PLACE
STATIONARY CYCLING

**Moderately Vigorous**
(30 minutes, 3 times a week)

BICYCLING
CALISTHENICS
DISCO DANCING
DOWNHILL SKIING
FIELD HOCKEY
HANDBALL
RACQUETBALL
SOCCER
SQUASH
SWIMMING
TENNIS (SINGLES)
WALKING BRISKLY

Note: These aerobic forms of exercise can be anaerobic if they are performed in a slow, non-sustained, irregular manner.

### Anaerobic (Non-Sustained) Exercise Does NOT Condition the Cardiovascular System

BASEBALL
BOWLING
FOOTBALL
GOLF
SKATEBOARDING
SOFTBALL
SPRINTING
TENNIS (DOUBLES)
VOLLEYBALL
WEIGHT LIFTING

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### To Get the Most Out of Aerobic Forms of Exercise Follow These Guidelines

1. Participate in a form of very vigorous aerobic exercise at *least* 15 minutes, three times a week.

2. Engage in moderately vigorous aerobic exercise for at *least* 30 minutes, three times a week.

3. If you only exercise three times a week, it is better to exercise every other day than three days in a row.

4. Exercise at 60% to 75% of your maximum heart rate. If you are 13 years old to 18 years old, the number of beats per minute is 120 (60%) to 150 (75%). To check your *working* heart rate, *immediately* after exercising count your heart beats for 10 seconds, then multiply by six.

5. For safety, remember to wear suitable shoes and clothing, do five minutes of warm-up exercises and five minutes of cool-down exercises.

# AT A GLANCE

# UNIT IV

## Sodium

### OBJECTIVES

The student will:

- Explain the effect of sodium on the cardiovascular system
- Describe personal use of foods containing sodium

### TEACHING TIME

One period

### LEARNING OPPORTUNITIES

Sodium and Cardiovascular Health
Sodium Self-Assessment

### TRANSPARENCY MASTERS

None

### STUDENT HANDOUTS

Approximate Sodium, Cholesterol and Fat Content of Some Foods (SH-IV)

- One per each group of six to eight students

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Distributed during Unit I

### KEY TERMS

sodium
milligrams
caffeine
sodium chloride

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

### Sodium and Cardiovascular Health

Three dietary factors currently associated with heart disease are sodium, saturated fats and cholesterol. This unit focuses on sodium. (Saturated fats and cholesterol are covered in Unit V.)

The relationship of diet to cardiovascular health is a complicated one. Several dietary factors have been incorrectly associated with cardiovascular disease; however, all are associated with other diseases.

*Coffee* had been a suspected risk factor because men who drink four to seven cups daily were more likely to have heart disease. However, men who drank coffee also were more likely to smoke cigarettes. Cigarette smoking, not coffee drinking, was the culprit. (See Health Review for Teachers, Unit I for more information.)

*Alcohol* is not considered a major risk factor of heart disease. Moderate alcohol consumption is associated with an increase in high density lipoproteins (HDLs) which may lower the risk of developing atherosclerosis. Heavy drinkers, those who drink more than two ounces of alcohol a day, increase their risk of developing cardiovascular problems. In addition, alcohol supplies calories which can contribute to weight gain. (See Health Review for Teachers, Unit V, for more information on HDLs.)

*Refined sugar* has been suggested as a cardiovascular risk factor. Research is ongoing in this area. Refined sugar is not now generally recognized as a cardiovascular risk factor.

### Sodium: Major Contributor to Heart Disease

Table salt, sodium chloride, is 40% sodium — it is the sodium in salt and other sodium containing seasonings that is a risk factor of hypertension. The relationship between sodium and heart disease is complex and not completely understood. It is theorized that sodium causes the body's fluid volume to expand, increasing pressure in the arteries.

Human beings need a very small amount of sodium in their diets, about 200 milligrams daily or 1/10th of a teaspoon of salt. (1 teaspoon = 2,300 mg. sodium). A daily amount of 200 mg. could be obtained from the amount of sodium naturally in food; salt need not be added in preparation or at the table.

### Reducing Salt Consumption

Although the removal of all added salt from the diet would be beneficial, it is difficult to accomplish. The average use of salt in the United States is two teaspoons of salt daily, about 20 times the amount recommended.

Sodium is contained in many favorite highly salted seasoning and snack foods, virtually every processed food, and many other foods not considered salty. As indicated by Approximate Sodium, Cholesterol and Fat Content of Some Foods, one hamburger roll contains over 200 milligrams of sodium. One medium dill pickle contains 923 milligrams of sodium.

Individuals are encouraged to reduce their sodium consumption to at least 2,000 milligrams daily by using a small amount of salt for cooking, adding no salt at the table and avoiding foods high in salt.

If the 2,000 milligram goal is not possible, individuals can reduce sodium intake to a self-determined goal. Those who are able to reduce sodium intake to less than 2,000 milligrams daily are encouraged to do so.

When people initially cut back on sodium, they have an increased attraction to the taste of salt at first. Once over that period, which can last several months, their tastebuds prefer relatively lower concentrations of salt.

# UNIT IVA

## Sodium and Cardiovascular Health

**Materials**

- Two sheets of black construction paper, a box of salt, measuring spoons
- Photocopy of Approximate Sodium, Cholesterol and Fat Content of Some Foods (SH-IV), one for each group of six to eight students
- Optional: A more complete guide to sodium in food such as *The Dieter's Complete Guide to Calories, Carbohydrates, Sodium, Fats and Cholesterol,* by Consumer's Guide, Fawcett Columbine, New York, 1981.

**Preparation**

Before presenting the information in this unit, ask students to write down everything they eat or drink for one 24-hour period. Collect their lists. At the conclusion of the next unit, students will analyze their sodium, fat and cholesterol intake.

- Read the Health Review for Teachers and review the Learning Opportunity
- Obtain materials described above
- Prepare copies of student handouts

# Learning Opportunity

## INTRODUCTION

## Nutrition Fact and Fancy

☐ *Introduce students to the relationship between nutrition and heart disease by bringing out the following points:*

The relationship of nutrition to heart disease is complex, but important. New information is constantly being added to what is known about nutrition and the heart, but many things are simply not known or not completely understood. Many myths and an abundance of misinformation exist about foods that are harmful to the heart.

☐ *Prepare students to take a true-false quiz about nutrition and cardiovascular health. The quiz below may be read orally, written on the blackboard or presented on a worksheet. Tell students:*

You will take a quick true-false quiz about nutrition and cardiovascular health. After taking the quiz you will correct your own paper and we will discuss the answers. (Option: Ask students to write why they believe each "false" statement to be false.)

**True-False Quiz**

1. Foods containing caffeine (coffee, many cola drinks and chocolate) contribute to heart disease. (false)

2. Foods high in salt contribute to heart disease. (true)
3. Foods from vegetable sources contribute to heart disease. (false)
4. Human beings need to add salt to their food. (false)
5. Gelatin deserts are high in sodium. (true)
6. Foods containing any type of oil should be avoided. (false)
7. All vegetable oils are low in saturated fats. (false)
8. It's easy to tell when foods are high in sodium; high-sodium foods taste salty. (false)
9. Foods that contribute to heart disease are those high in sodium, saturated fats or cholesterol. (true)

☐ *After presenting the quiz, discuss correct answers using the following points as guidelines:*

1. Although foods high in caffeine are harmful for other reasons, they do not contribute to heart disease. This is a myth.
2. Foods high in salt lead to high blood pressure, a form of heart disease. Salt is made up of sodium and chloride. It is the sodium in salt that leads to high blood pressure. Salt is 40% sodium.
3. Foods from vegetable sources are generally low in sodium, saturated fats and cholesterol. Foods from vegetable sources generally do not contribute to heart disease.
4. Human beings need a very small amount of sodium in their daily diets. The required amount could be obtained from the natural sodium in food.
5. Gelatin desserts are very high in sodium. When chloride is not combined with sodium, it does not taste salty. By reading labels on foods and looking for the word "sodium," you will find other foods that are high in sodium and should be avoided.
6. Foods containing oil from vegetable sources are generally low in saturated fats, high in polyunsaturated fats and desirable from a cardiovascular perspective.
7. While most vegetable oils are low in saturated fats or fatty acids, not all are. (The "exceptions" will be in introduced in the next unit.)
8. Although foods containing sodium combined with chloride (table salt) taste salty, sodium does not taste salty when not combined with chloride. Example of foods high in sodium that don't taste salty include soda pop, gelatin dessert and monosodium glutamate.
9. Yes. Foods high in these have been linked to heart disease. However, foods and beverages that are not harmful to the heart may be harmful in other ways and should be limited. Sugar, for example, provides empty calories and promotes tooth decay.

☐ *Inform students they will be studying the three primary dietary factors that have been linked to heart disease: sodium, saturated fats and cholesterol. Sodium will be studied in this unit. Saturated fats and cholesterol will be studied in the next unit.*

## MAIN ACTIVITY

## How Much Salt Do We Need?

☐ *Inform students that we get far more sodium daily than we need from table salt, seasonings containing sodium and foods high in sodium. Illustrate this concept by presenting the following demonstration. Place each sheet of black construction paper on a flat surface and ask the following questions:*

Guess how much sodium is actually needed daily? (Pour 1/10th teaspoon of salt on paper — this contains the needed amount of sodium, 200 milligrams.)

Guess how much sodium Americans typically consume daily? (Pour two and a half teaspoons of salt on paper — this contains the typical amount of sodium, 5,000 milligrams.)

Guess the maximum amount of sodium permitted daily in a diet designed to promote cardiovascular health? (Pour one teaspoon of salt on the paper, 2,000 milligrams.)

☐ *Present additional information about sources of sodium in the diet. Through questions and answers introduce the following sources of sodium:*

Sodium occurs naturally in fresh foods. Fresh meat, poultry, eggs, fish and dairy products contain a small amount of sodium. To a lesser extent, sodium is found in fresh fruits and vegetables.

Sodium is added to many foods during processing. The following ingredients, sometimes listed on food labels or in recipes, are high in sodium:

Baking powder—leavening agent
Baking soda (sodium bicarbonate)—leavening agent to make foods rise
Monosodium glutamate (MSG)—flavor enhancer
Sodium benzoate—preservative
Sodium citrate—controls acidity in soft drinks, fruit drinks, jams and jellies
Sodium nitrite—curing agent for meat
Sodium propionate—inhibits mold growth in bakery products
Sodium saccharin—artificial sweetener

Salt added while cooking contributes to the total sodium intake. When added at the table it contributes to about 25% of the total sodium intake. By not adding salt to food, most people can reduce their consumption of salt by about 25%.

☐ *Give students the chance to identify the approximate amount of sodium in foods they commonly eat. Help them recognize that many foods, particularly fast foods, are high in sodium. Direct students to use either Approximate Sodium, Cholesterol and Fat Content of Some Foods (SH-IV) or* The Dieter's Complete Guide to Calories, Carbohydrates, Sodium Fats and Cholesterol *to complete activities such as those listed below:*

Identify the approximate amount of sodium in this lunch: a hamburger with roll, pickle, mustard, mayonnaise, catsup and tomato, a side order of fries, a cola drink, one cup of fruit-flavored gelatin.

Plan a lunch low in sodium (600 milligrams or less). The lunch should have foods from each of the four food groups.

Identify types of foods high in sodium and low in sodium.

Identify foods commonly served at home that are low in sodium and high in sodium. Propose a low-sodium substitute.

## CONCLUSION

## Keeping Sodium Intake Down

☐ *Summarize information learned about sodium using the following questions as guidelines:*

How much sodium is actually needed daily? (About 200 milligrams.)

What kinds of foods are naturally high in sodium? Low?

What are non-salty replacements for foods high in sodium (salt)?

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts, you may want to introduce some of the Additional Considerations.*

Can students describe the relationship between salt and sodium?

Can students use a nutritional chart to identify the amount of sodium in various foods?

Can students explain the effect of sodium on the cardiovascular system?

## ADDITIONAL CONSIDERATIONS

## More on Sodium

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

Go to a fast food restaurant and write down foods ordered for a typical lunch meal. Bring the paper to class and identify the approximate amount of sodium in the meal. (The optional reference published by Consumer's Guide identifies nutrients in foods available at fast food stores.) (Consumer Issue)

Does the school cafeteria serve foods low in sodium? If yes, what are they?

Prepare a meal using ¼ the salt in the recipe.

Compare the labels on canned and frozen vegetables. Which form is usually lower in sodium? (Consumer Issue)

## UNIT IVB

### Sodium Self-Assessment

**Materials**

- Cardiovascular Health Self-Assessment (SH-I) for each student

**Preparation**

- Read the Health Review for Teachers and review Learning Opportunity

# Learning Opportunity

## INTRODUCTION AND MAIN ACTIVITY

### Self-Assessment

☐ *Help students complete the nutrition columns by directing them to:*

Look at the column titled "Sodium." Circle the box that represnts your use of sodium. If you do not prepare your meals, consider the amount of salt added by those who fix your meals at home, in the school cafeteria or in a restaurant.

## CONCLUSION

### Less Sodium, Better Health

☐ *Conduct a discussion using the following questions as guidelines:*

How could you decrease your intake of sodium?

Why is it important to read nutritional labels on foods?

What terms on labels indicate a food contains sodium?

(SH-IV)

# Approximate Sodium, Cholesterol and Fat Content of Some Foods

| Food | Amount | Total Fat (grams) | Saturated Fat (grams) | Cholesterol (milli-grams) | Sodium (milli-grams) |
|---|---|---|---|---|---|
| **Poultry, Fish and Meat** | | | | | |
| Bacon, cooked & drained | 1 thick slice | 6.2 | 2.0 | 10.5 | 122 |
| Beef, cooked lean | 3 oz | 11.8 | 5.7 | 77 | 43 |
| Beef, cooked corned | 3 oz | 25.9 | 12.4 | 80 | 802 |
| Chicken, roasted dark meat | 1 cup | 8.8 | 2.8 | 127 | 120 |
| Chicken, roasted light meat | 1 cup | 4.8 | 1.5 | 111 | 89 |
| Hamburger, broiled 21% fat | 4 oz raw | 16.5 | 7.9 | 76.5 | 48 |
| Ham, fresh cooked lean | 3 oz | 8.5 | 3.1 | 75 | 61 |
| Ham, cured canned | 3 oz | 10.5 | 3.8 | 75 | 797 |
| Tuna, in oil | 3.5 oz | 15.7 | NA | 30 | 520 |
| Tuna, in water | 3.5 oz | 1.9 | 0 | 35 | 470 |
| Turkey, roasted dark meat | 1 cup | 11.6 | 3.4 | 141 | 138 |
| Turkey, roasted light meat | 1 cup | 5.5 | 1.6 | 108 | 114 |
| **Beans and Nuts** | | | | | |
| Kidney beans, dark red canned, with salt | 1 cup | 1.0 | 0 | 0 | 790 |
| Kidney beans, red dry cooked, no salt | 1 cup | 0.9 | 0 | 0 | 6 |
| Peanuts, salted, dry roasted | 1 oz | 14.0 | 2.0 | 0 | 220 |
| Peanuts, unsalted | 1 oz | 15.0 | 2.0 | 0 | 10 |
| Pinto beans, raw | 1 cup | 2.3 | 0 | 0 | 19 |

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# Approximate Sodium, Cholesterol and Fat Content of Some Foods

| Food | Amount | Total Fat (grams) | Saturated Fat (grams) | Cholesterol (milligrams) | Sodium (milligrams) |
|---|---|---|---|---|---|
| **Vegetables** | | | | | |
| Black-eyed peas immature, canned | 1 cup | 0.8 | 0 | 0 | 601 |
| Broccoli, chopped frozen | 3.3 oz | 0 | 0 | 0 | 15 |
| Carrots, raw | 1 | 0.1 | 0 | 0 | 33 |
| Carrots, canned | 1 cup | 0 | 0 | 0 | 60 |
| Celery | 1 cup | 0.1 | 0 | 0 | 151 |
| Collard greens, chopped frozen | 4.0 oz | 0 | 0 | 0 | 45 |
| Corn on the cob | 1 ear | 0.8 | 0 | 0 | 0 |
| Mushrooms, canned | 3.5 oz | 0.2 | 0 | 0 | 467 |
| Mushrooms, raw | 1 cup | 0.2 | 0 | 0 | 11 |
| Peas, canned | 1 cup | 0 | 0 | 0 | 10 |
| Peas, cooked fresh | 1 cup | 0.6 | 0 | 0 | 2 |
| Potato, baked | 1 | 0.2 | 0 | 0 | 6 |
| Potato, french fried with salt | 1 cup | 24.1 | 6.0 | 0 | 379 |
| Potato, hash browns with salt | 1 cup | 18.1 | 4.5 | 0 | 446 |
| Spinach, fresh without salt | 1 cup | 0.5 | 0 | 0 | 90 |
| Tomatoes, fresh | 1 lb. | 0.8 | 0 | 0 | 12 |
| **Fruits** | | | | | |
| Apple | 1 | 0.8 | 0 | 0 | 1 |
| Banana | 1 | 0.2 | 0 | 0 | 1 |
| Cherries, fresh sweet | 1 lb. | 1.2 | 0 | 0 | 8 |
| Cherries, canned sweet | 1 cup | 0.5 | 0 | 0 | 3 |
| Orange, Valencia | 1 | 0.4 | 0 | 0 | 1 |
| Peaches, canned | 1 cup | 0 | 0 | 0 | 45 |

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# Approximate Sodium, Cholesterol and Fat Content of Some Foods

| Food | Amount | Total Fat (grams) | Saturated Fat (grams) | Cholesterol (milli-grams) | Sodium (milli-grams) |
|---|---|---|---|---|---|
| **Breads, Cereals, and Grains** | | | | | |
| Biscuits, homemade baking powder | 1 | 4.9 | 1.2 | 0 | 187 |
| Bread, white | 1 slice | 0.9 | 0.2 | 1 | 144 |
| Bread, whole wheat | 1 slice | 0.8 | 0.2 | 1 | 132 |
| Cereal, corn flakes | 1 oz | 1.0 | 0 | 0 | 310 |
| Cereal, granola | 1 oz | 5.0 | NA | 0 | 50 |
| Cereal, shredded wheat | 1 biscuit | 0.2 | 0 | 0 | 1 |
| Cookies, homemade chocolate chip | 1 cookie | 3.0 | 0.9 | 5 | 35 |
| Cornbread muffin mix, prepared | 1 muffin | 4.2 | 1.2 | 23 | 192 |
| Rice, enriched white, prepared without salt, hot | 1 cup | 0.2 | 0 | 0 | 0 |
| Rolls, hamburger | 1 roll | 2.2 | 0.5 | 2 | 202 |
| **Milk and Milk Products** | | | | | |
| Cheese, cheddar | 1 oz | 9.1 | 5.0 | 28 | 199 |
| Cheese, pasteurized processed American | 1 oz | 7.0 | 4.0 | 20 | 405 |
| Cheese, natural Swiss | 1 oz | 8.0 | 5.0 | 26 | 74 |
| Cheese, pasteurized processed Swiss | 1 oz | 7.1 | 4.6 | 24 | 388 |
| Ice cream (10% fat) | 1 cup | 14.1 | 7.8 | 53 | 83 |
| Ice milk (5.1% fat) | 1 cup | 6.7 | 3.7 | 26 | 89 |
| Milk, low fat (2% fat) | 1 cup | 4.7 | 2.9 | 18 | 122 |
| Milk, non-fat (skim) | 1 cup | 0.2 | 0 | 5 | 127 |
| Milk, whole (3.7%fat) | 1 cup | 8.9 | 5.6 | 35 | 119 |

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# Approximate Sodium, Cholesterol and Fat Content of Some Foods

| Food | Amount | Total Fat (grams) | Saturated Fat (grams) | Cholesterol (milligrams) | Sodium (milligrams) |
|---|---|---|---|---|---|
| **Soft Drinks** | | | | | |
| Mineral water, club soda | 12 oz | 0 | 0 | 0 | 5 to 400 |
| Soft drinks, with sugar | 12 oz | 0 | 0 | 0 | 1 to 61 |
| Soft drinks, artificially sweetened | 12 oz | 0 | 0 | 0 | 20 to 100 |
| **Condiments** | | | | | |
| Baking soda, regular | 1 tsp | 0 | 0 | 0 | 952 |
| Barbecue sauce, smoky | 1 tbsp | 0 | 0 | 0 | 295 |
| Catsup, with salt | 1 tbsp | 0.1 | 0 | 0 | 156 |
| Garlic, powder | 1 tsp | 0 | 0 | 0 | 1 |
| Garlic, raw | 1 clove | 0 | 0 | 0 | 1 |
| Garlic, salt | 1 tsp | 0 | 0 | 0 | 1,850 |
| Mayonnaise | 1 tbsp | 11.2 | 2.0 | 10 | 83 |
| Meat tenderizer, regular | 1 tsp | 0.5 | 0 | 0 | 1,760 |
| Mustard, brown | 1 tbsp | 1.0 | 0 | NA | 150 |
| Pickle, dill | 1 medium | 0.1 | 0 | 0 | 928 |
| Pickle relish | 1 tsp | 0.1 | 0 | 0 | 35 |
| Salad dressing, Italian commercial no salt | 1 tbsp | 9.0 | 1.6 | 0 | 5 |
| Salad dressing Italian commercial, with salt | 1 tbsp | 9.0 | 1.6 | 0 | 313 |
| Soy sauce | 1 tbsp | 0.1 | Tr. | Tr. | 975 |
| Taco sauce, spicy | 1 tbsp | 1.0 | 0 | 0 | 80 |

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**AT A GLANCE** | **UNIT V**

# Saturated Fats and Cholesterol

## OBJECTIVES

The student will:
- Explain the effect of saturated fat and cholesterol on the cardiovascular system
- Describe personal use of foods containing saturated fat and cholesterol

## TEACHING TIME

One to two periods

## LEARNING OPPORTUNITIES

Saturated Fats, Cholesterol and Cardiovascular Health
Saturated Fats/Cholesterol Self-Assessment

## TRANSPARENCY MASTER

Fatty Acids and Lipids in Dietary Fats (TM-V)

## STUDENT HANDOUTS

Approximate Sodium, Cholesterol and Fat Content of Some Foods (SH-IV)
- See Unit IV
- One for each group of six to eight students
- Non-consumable

Cardiovascular Health Self-Assessment (SH-I)
- One per student
- Distributed during Unit I

## KEY TERMS

saturated fats
polyunsaturated fats
cholesterol

## EXAMINATION QUESTIONS

Two student examinations, a pre-test and a post-test, are presented in the Appendix of this Teaching Handbook. The tests contain the same questions ordered differently. These questions can be incorporated into a quiz on this unit.

# Health Review for Teachers

### Saturated Fats, Cholesterol and Heart Health

Saturated fats and cholesterol, like sodium, are dietary factors that have been associated with cardiovascular disease. In general, a diet high in saturated fats and cholesterol (the two commonly are found together in many foods) contributes to atherosclerosis.

*Atherosclerosis* is a disease characterized by a thickening and loss of elasticity of artery walls. The artery wall is thickened by deposits of several substances, particularly fatty deposits. As atherosclerosis advances, the blood passageway decreases in circumference and the likelihood of hypertension and cardiovascular disease increases.

The deposits on artery walls are called *plaques*. When plaques form inside the blood vessels, they can cause blood clotting reactions to begin. Plaques are composed primarily of cholesterol, and this cholesterol is manufactured largely from saturated fat.

Reduced consumption of saturated fat may lead to a reduced formation of cholesterol (lipids found only in animal products). Because diet also contributes cholesterol to the body, it may be helpful to reduce cholesterol intake as well.

### Atherosclerosis: Who's Likely to Develop It

We know that individuals vary greatly in their tolerance of cholesterol and animal fats in their diet. In the past, a person's total cholesterol concentration in the blood was used to predict his or her likelihood of developing heart disease. Today, it is recognized that to dissolve in the blood, cholesterol attaches to either a high density lipoprotein (HDL) or a low density lipoprotein (LDL).

When cholesterol attaches to an HDL, it is carried out of the body, which protects the body against atherosclerosis. When it attaches to an LDL, it stays in the body and may contribute to the development of atherosclerosis.

People have different levels of HDL and LDL in their bodies, and certain characteristics determine those levels:

The typical characteristics of a person with high levels of HDL and low levels of LDL:

Female
Non- or ex-smoker
High physical activity level
Fats consumed are usually from vegetable oils
Blood cholesterol at normal levels in the body

The typical characteristics of a person with low levels of HDL and high levels of LDL:

Male
Overweight
Smoker
Low physical activity level
Fats consumed are usually from animals
Blood cholesterol at high levels in body

### What People Can Do

The American Heart Association and others concerned with cardiovascular health recommend these steps to reduce the chance of developing atherosclerosis:

- Overall consumption of fat be reduced so it contributes no more than 30% of the calories consumed daily.
- Saturated fat intake be reduced so it contributes only 10% of the total calories; the remaining fat should come from monosaturated and polyunsaturated sources.
- Cholesterol consumption be reduced to about 300 mg. daily (the current U.S. average is about 600 mg. daily).

The chart Fatty Acids and Lipids in Dietary Fats (TM-V) indicates the makeup of various oils, information that can help in reducing saturated fats and cholesterol in the diet:

Oils highest in polyunsaturated and lowest in saturated fatty acids include safflower oil, corn oil, sunflower seed oil and soy bean oil — all vegetable in origin.

Oils and fats highest in saturated and lowest in polyunsaturated fatty acids include butter, tallow and lard — all animal in origin.

The two vegetable oils high in saturated and low in polyunsaturated fatty acids are coconut oil and palm oil.

When an oil or fat has been hydrogenated, it has undergone a process that makes it more saturated. Consumers can read labels to learn which products contain hydrogenated fats and oils.

# UNIT VA

## Cholesterol and Saturated Fats

### Materials

- Transparency master, Fatty Acids and Lipids in Dietary Fats (TM-V) and overhead projector
- Photocopy of Approximate Sodium, Cholesterol and Fat Content of Some Foods (SH-IV), one set for each group of six to eight students (see Unit IV)
- Optional: *The Dieter's Complete Guide to Calories, Carbohydrates, Sodium, Fats and Cholesterol*, by Consumer's Guide, Fawcett Columbine, New York, 1981.

### Preparation

- Read the Health Review for Teachers and review the Learning Opportunity
- Obtain materials described above
- Prepare transparency
- Prepare student handouts

### Option

- Saturated fats are typically hard at room temperature. In contrast, polyunsaturated fats are typically liquid at room temperature. To illustrate this concept, bring in a bottle of polyunsaturated oil (i.e. corn or safflower oil) and a package of lard or slab of fat trimmed from an animal. (A slab of fat can be ordered in advance from the butcher.)

# Learning Opportunity

## INTRODUCTION

## Effect on Arteries

☐ *Expand the information you previously presented about nutrition and heart disease by bringing out the following points:*

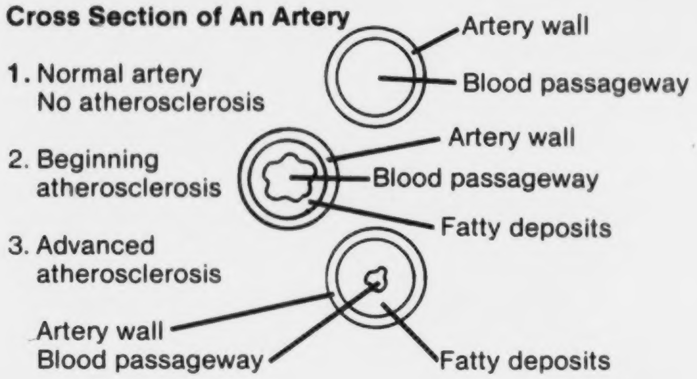
You completed a quiz about nutrition and heart disease. Consumption of which types of foods contribute to heart disease? (Foods high in sodium or salt, saturated fats or cholesterol.)

Saturated fats and cholesterol commonly are found together in many foods. In general, they are found in foods from animal sources.

While sodium contributes to heart disease by causing excess water retention, cholesterol and saturated fats contribute to heart disease in a different way.

In simplified terms, a diet high in saturated fats or cholesterol contributes to the development of atherosclerosis, a disease in which artery walls thicken and lose elasticity.

☐ *Draw the following illustrations on the board while discussing atherosclerosis:*


**Cross Section of An Artery**
1. Normal artery No atherosclerosis
Artery wall
Blood passageway
2. Beginning atherosclerosis
Artery wall
Blood passageway
Fatty deposits
3. Advanced atherosclerosis
Artery wall
Blood passageway
Fatty deposits

A normal, healthy artery has an unobstructed blood passageway. As atherosclerosis progresses, fatty deposits and fatty plaques line the wall of the artery, obstructing the blood passageway. As a result, blood pressure increases.

This unit will present general information about cholesterol and saturated fats. However, every person's body responds to cholesterol in a slightly different way. Cholesterol seems to be less harmful in women, people of normal weight, non- or ex-smokers, physically active people and people who eat a diet high in polyunsaturated oils. Cholesterol seems to be more harmful in men, smokers, inactive people, and people who eat a diet high in animal fats.

## MAIN ACTIVITY

## Harmful Fats and Oils

☐ *Guide students in examining Fatty Acids and Lipids in Dietary Fats (TM-V) and deducing which forms of oils and fats are high in saturated fats. Project TM-V. The following questions can serve as discussion guidelines:*

Fats and oils harmful to the heart are those high in saturated fatty acids and low in polyunsaturated fatty acids. Looking at this chart, which fats and oils are harmful to the heart? (Butter, tallow, lard and coconut oil, in particular.)

Do fats and oils harmful to the heart come from plant sources or animal sources or both? (Both —butter, tallow and lard from animals; coconut oil and palm oil from plants.)

Fats and oils low in saturated fats and high in polyunsaturated fats are better for your heart. Although overall fat and oil consumption should be reduced, polyunsaturated fats should replace saturated fats whenever possible. Looking at this chart, which forms of fats and oils are higher in polyunsaturated fats and better for your heart? (Soya, sunflower, corn and safflower oil, in particular.)

Are these fats and oils that are high in polyunsaturated fats from plant or animal sources? (Plant.)

Can it be said that all vegetable oils are better for your heart? Why or why not? (No, — coconut and palm oils, though from vegetable sources, are harmful to your heart.)

☐ *Guide students in examining Approximate Sodium, Cholesterol and Fat Content of Some Foods (SH-IV) and deducing which types of foods are high and which are low in saturated fat and cholesterol. The following questions can serve as guidelines for discussion:*

By reading nutrition information on food labels or in nutrition reference books, it is easy to compare saturated fats and cholesterol in specific foods. Looking at the general categories "Poultry, Fish and Meat," "Beans and Nuts," "Vegetables" and "Fruits," which single category is highest in total fat? Saturated fat? Cholesterol?

Within the "Poultry, Fish and Meat" category, compare 3 oz. of cooked lean beef, 3 oz. of cured ham and 3.5 oz. of tuna in water. Which is higher in total fat? Saturated fat? Cholesterol?

Why do nutritionists recommend that people eat more fish and less beef, pork and ham?

Chicken and turkey, particularly without the skin, also are good replacements for beef and pork. Looking at this chart, determine whether dark or light chicken and turkey meat are better for your heart.

Beans and nuts are good sources of protein. How do they compare to beef and ham? Which type of food is higher in cholesterol? Saturated fats?

Fresh vegetables usually are low in saturated fats and cholesterol. However, fats are sometimes used in cooking. Compare a baked, hash browned or french fried potato. Which is highest in saturated fats? Cholesterol? Total fat? If the french fries are cooked in coconut oil, how would the proportion of total fat/saturated fat change?

Look at the category "Breads, Cereals and Grains." Are these generally low in saturated fat and cholesterol? (Yes.) Foods in this category when combined with beans are high in protein. Would rice and beans combined be a good source of protein? (Yes.) Would this protein source be high in cholesterol and saturated fats? (No; low in each, so good for your heart.)

Look at the "Milk and Milk Products" category. Foods in this category supply calcium, an essential nutrient. It is important to eat foods from this category daily. Considering cholesterol and saturated fat, which form of milk is most desirable? Least?

You have been considering cholesterol and fats in analyzing these foods. In the previous unit, you considered the sodium content of foods. These factors must be considered in combination in selecting foods that are good for your heart. Considering sodium as well as fat and cholesterol, select three foods in each category that should be part of a heart healthy diet.

## CONCLUSION

## Diet Improvements

☐ *Have students apply information learned about sodium, saturated fats and cholesterol by responding to comments and questions such as these:*

Analyze the list of foods you ate in one 24-hour period.

Looking at your list of foods, put an "S" next to each food you ate that is high in sodium (salt) or to which you added salt.

Put a "C/F" next to each food you ate that is high in cholesterol or saturated fats.

Identify a low-sodium, low-saturated fat/cholesterol replacement for each food high in these.

Look at your list carefully. Select one replacement that you will substitute for a high sodium food, and one replacement that you will substitute for a high cholesterol/saturated fat food. Try to use these replacement foods for a week.

If you want to improve your diet, make changes slowly. After you have incorporated a change into your normal dietary pattern, re-analyze your diet and make another change.

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts, you may wish to introduce some of the Additional Considerations.*

Can students identify dietary factors other than sodium that contribute to cardiovascular disease?

Can students explain the relationship between atherosclerosis, saturated fats and cholesterol?

Can students distinguish between sources of dietary fats that are high or low in saturated fats?

Can students identify foods they commonly eat that are high in saturated fats and cholesterol? Can they recommend low-cholesterol/saturated fat replacements?

Can students use a nutritional chart to identify the amount of saturated fats, cholesterol and sodium in various foods?

## ADDITIONAL CONSIDERATIONS

## More on Diet

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

Which foods available from a fast food restaurant are low in saturated fats and cholesterol as well as sodium? (Note: Student can go to a fast food restaurant and analyze the menu before answering this question.) (Consumer Issue)

Which foods served in the school cafeteria are low in saturated fats and cholesterol as well as sodium?

Plan, then prepare and eat a lunch that has foods from each of the four food groups and is low in saturated fats, sodium and cholesterol.

Develop a list of snack foods that are low in cholesterol, saturated fats and sodium.

Compare the labels on different brands of margarine. Classify the brands as high or low in saturated fats. Can you identify a relationship between price of margarine and quantity of saturated fats? (Consumer Issue)

# UNIT VB

## Saturated Fats and Cholesterol Self-Assessment

**Materials**

- Cardiovascular Health Self-Assessment (SH-I) for each student

**Preparation**

- Read Health Review for Teachers and review Learning Opportunity

# Learning Opportunity

## INTRODUCTION AND MAIN ACTIVITY

### Self-Assessment

☐ *Help students complete the nutrition columns by directing them to:*

Look at the column titled "Cholesterol/Saturated Fats." If you know your cholesterol blood level, you can use it as a guide to mark the appropriate box. The cholesterol blood level is determined through use of a special blood test. If you don't know it, estimate the percentage of solid fats you eat.

The average amount of saturated fats eaten by Americans is 40% of the total dietary fat. If you eat without trying to limit the amount of beef, ham, pork, eggs, whole milk, etc., you probably eat a diet of at least 40% total fat.

## CONCLUSION

### Watching What You Eat

☐ *Conduct a discussion using the following questions as guidelines:*

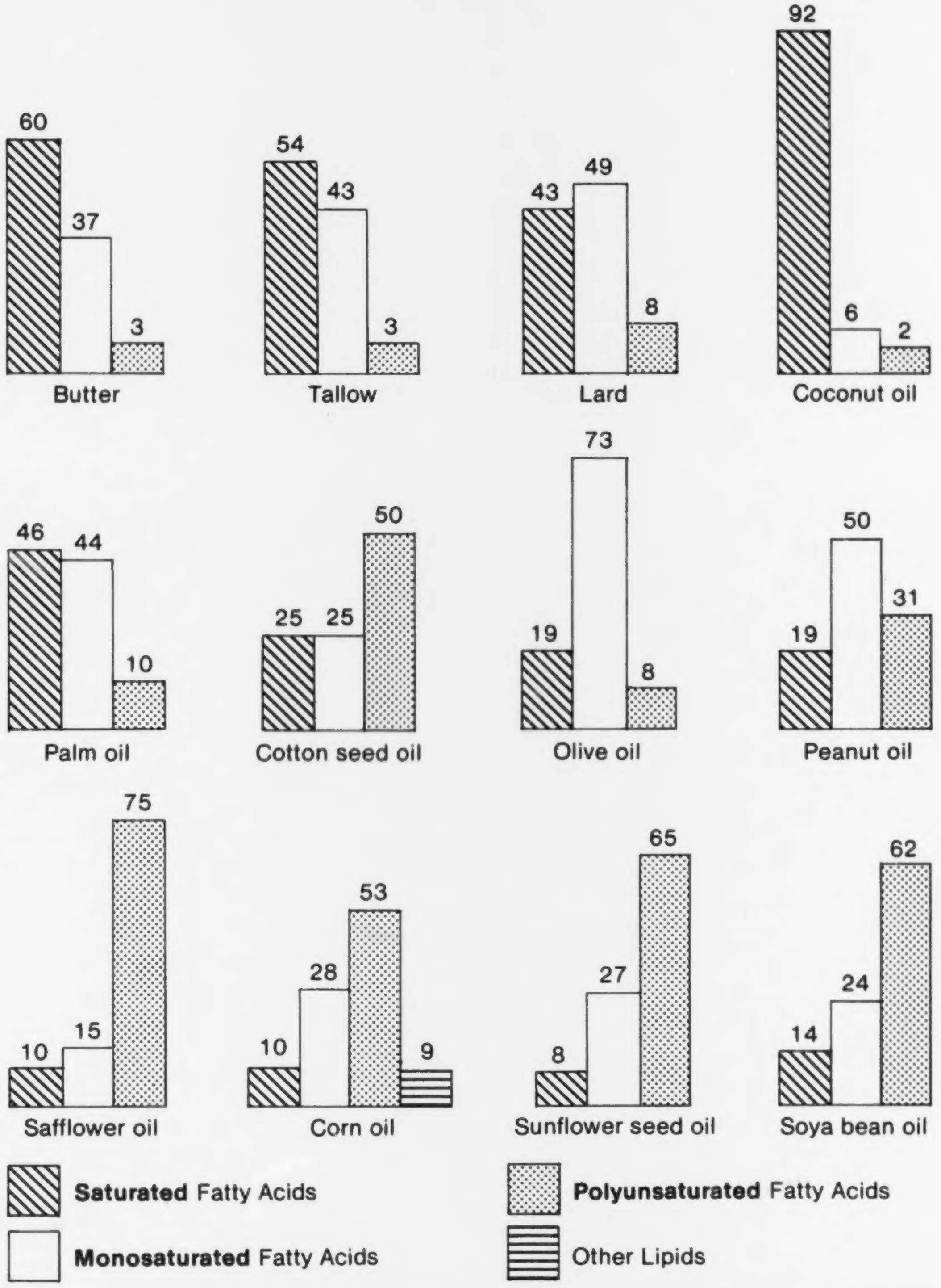
How could you decrease your intake of saturated fats? Cholesterol?

What low sodium, low saturated fats, and low cholesterol foods can be ordered at a pizza parlor? Hamburger stand? Mexican food restaurant? Soul food restaurant? Chinese restaurant? Other specialty restaurants?

Identify snack or party foods that are low in saturated fats, cholesterol and sodium.

TM-IV

# Fatty Acids and Lipids in Dietary Fats



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# AT A GLANCE

# UNIT VI

## Body Fitness

### OBJECTIVES

The student will:

- Describe a process for predicting caloric needs
- Explain the effect of obesity on the cardiovascular system
- Differentiate between internal and external eating cues

### TEACHING TIME

One period

### LEARNING OPPORTUNITIES

Body Fitness and Cardiovascular Health
Body Fitness Self-Assessment

### TRANSPARENCY MASTERS

Body Fitness Is Related to Cardiovascular Health in Many Ways (TM-VI)
Approximate Desirable Weights for 15-Year-Olds to 18-Year-Olds (TM-VI.1)

### STUDENT HANDOUTS

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Distributed in Unit I

Calculate Your Caloric Needs (SH-VI)

- One per student

Body Fitness for 14-Year-Olds to 18-Year-Olds (Optional)

- One per student, if skinfold measurements are taken

### KEY TERMS

anorexia nervosa
overweight
overly fat
caliper
calories
activity level
internal cues
external cues
obesity

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

### Maintaining Body Fitness

Maintaining proper figure or physique is important to most Americans and is highly relevant to cardiovascular health. Roughly one out of every three Americans is too fat.

Although the terms "weight," "overweight," and "underweight" are commonly used, the real concern is the percentage of body fat. For good health, the maximum percentage of body fat is 15% for a young man and 24% for a young woman. For most athletes, or vigorous, regular exercisers, the percentage of body fat can be 10% to 15% for a man or 20% to 24% for a woman. Less than 10% body fat reflects less than optimal health.

### Height/Weight Charts vs. Skinfold Measurements

Height and weight charts approximate a desirable weight for an individual of a specific height, age and gender. For simplicity, this lesson uses a height and weight chart designed for adolescents. However, height and weight charts do not consider individuals' body fat, so they may be inaccurate for people such as athletes with highly developed muscle tissue.

Instead of using height and weight charts, instructors may use calipers with students. Calipers take skinfold measurements that help closely estimate the percentage of body fat. Though the measurements can be taken at many sites on the body, the preferred sites are near the triceps and subscapular muscles.

### Body Fatness and Cardiovascular Disease

The percentage of body fat is related to cardiovascular disease in three major ways. First, excessive fat tissue is a risk factor of cardiovascular disease: Obese individuals are more likely to develop cardiovascular disease than individuals who are fit. Obesity has been associated with a higher incidence of heart attacks, heart pain, congestive heart failure, high blood pressure, strokes, varicose veins, hemorrhoids and blood clots.

Second, excessive body fat contributes to the development of the other risk factors. Obese individuals are more likely to have hypertension and high blood cholesterol counts with low HDL and high LDL. Also, stress management and exercise may be difficult.

Third, extreme thinness can be harmful to the heart. When individuals deprive themselves of nearly all food in order to lose weight, they lose not only fat but muscle tissue. In severe cases of extreme thinness, tissue of the heart muscle is lost and the heart is weakened. Anorexia nervosa, a mental disease characterized by willful self-starvation, can damage the heart and lead to death.

### Goal for the Obese: Permanent Loss

Weight reduction in those who are obese leads directly and indirectly to the promotion of cardiovascular health. Weight loss alone, particularly that which incorporates a reduction in salt intake, will lower blood pressure in most hypertensives. For every 25 pounds lost, an obese hypertensive will experience about a 10 point decrease in systolic blood pressure. Fat loss that incorporates a reduction of foods high in animal fat and cholesterol with an increase in exercise, results in a reduction of blood cholesterol levels.

Lasting reduction of fat tissue is the result of permanent changes in eating habits and activity patterns. Obese individuals should not "go on a diet" as a temporary period of deprivation. Instead, reducing fat should be viewed as a positive and permanent change in food and activity choices, eating behaviors and lifestyle patterns. Additional exercise should be incorporated into daily work, school and leisure activities. The recommended rate of loss for a permanent weight loss is one to two pounds a week.

### Fact and Fancy About Fat Reduction

Many myths about worthless approaches exist. Here are some common ones:

Myth: Fat runs in my family: I inherited my weight problem.
Reality: It is eating habits and recipes that "run" in families.

Myth: I'm not fat; I have heavy bones.
Reality: Even truly obese people have normal bone structure.

Myth: I don't eat too much; something is wrong with my glands.
Reality: A glandular imbalance is the cause of overfatness, at most, for 5 out of every 1,000 people.

Myth: Exercise is worthless in trying to lose weight.
Reality: Walking one extra mile daily for a year will take off 10 pounds.

Myth: Fad diets, crash programs, quick cures, starvation are good approaches.
Reality: They usually result in a cycle of losing and regaining weight.

### Calories and Exercise: Keys to Body Fitness

Multiplying weight in pounds by the activity level scores given below gives the approximate number of calories we need daily to maintain our current weight. This becomes the basis for determining how to reduce.

*Activity level scores*
13 — Very sedentary, confined to room or bed
14 — Sedentary, light work (applies to most Americans)
15 — Moderately active, some recreation, mostly on weekends
16 — Very active, aerobic exercise three times a week or manual labor
17 — Superactive, competitive athlete

If a teen-ager weighs 140 pounds and is moderately active, for example, he or she needs approximately 2,100 calories daily.

In order to lose weight and maintain the weight loss, lose no more than one to two pounds weekly. One pound is 3,500 calories.

- To lose one pound weekly, reduce caloric intake by 500 calories daily.
- To lose two pounds weekly, reduce caloric intake by about 1,000 calories daily. Greater reductions in calories are not advised as they can result in the loss of muscle tissue.
- Reducing calories combined with increasing activity is the most effective way to reduce fat.

### Eating Cues

People who want to reduce fat also should examine the cues that make them eat. Thin people typically respond to internal cues of hunger; their body tells them when to eat. Fat people are more likely to respond to external or environmental cues of hunger.

To reduce, then, people who respond to external cues of hunger should:

- Find out which external cues (taste, smell, appearance) make them eat.
- Control those external cues.
- Control the actual act of eating.
- Reward successes in controlling eating behaviors.

# UNIT VIA

## Body Fitness and Cardiovascular Health

### Materials

- Overhead projector and transparency. Body Fitness Is Related to Cardiovascular Health in Many Ways (TM-VI).
- Student handout, Calculate Your Caloric Needs (SH-VI).
- Optional: *The Dieter's Complete Guide to Calories, Carbohydrates, Sodium, Fats and Cholesterol,* by Consumer's Guide, Fawcett Columbine, New York, 1981.

### Preparation

- Read the Health Review for Teachers and review the Learning Opportunity
- Prepare transparencies and copies of student handout

### Options

- The film *Bodyfuel*, available from the American Heart Association, can be shown to emphasize the relationship between fitness and cardiovascular health.
- Skinfold calipers can be used to more closely approximate the percentage of body fat. If this approach is used, instructors must be well-acquainted with procedures for taking measurements with skinfold calipers. For guidance, refer to pages 10 to 18 of the *Health Related Physical Fitness Technical Manual*, 1984, and pages 12 to 17 of the *Health Related Physical Fitness Test Manual*, 1980, both available from the American Alliance for Health, Physical Education, Recreation and Dance, 1900 Association Drive, Reston, Virginia 22091. Using guidelines in these publications, introduce students to the caliper in Unit VIA, then use it with them in Unit VIB.

# Learning Opportunity

## INTRODUCTION

## Reducing Body Fat

☐ *Introduce reduction of body fat as a way to protect cardiovascular health by discussing the following:*

Percentage of body fat is another factor that contributes to cardiovascular health in many ways. If you are obese, the information in this unit may help you now.

If you are fit, the information in this unit can help you assess what you are doing right so you can keep yourself from becoming obese. Almost one out of every three adult Americans is obese, so this information may well be useful sometime in your future.

Health problems also are associated with being extremely thin. For example, extreme thinness brought about by self-starvation, anorexia nervosa, can damage the heart as well as other body parts, and can lead to death.

☐ *Expand upon the multifaceted relationship between fitness and cardiovascular health. Use the transparency Body Fitness Is Related to Cardiovascular Health in Many Ways (TM-VI) to illustrate the following points:*

Being obese directly contributes to cardiovascular disease — obese people have a higher chance of developing cardiovascular disease. To help prevent cardiovascular disease, young women should have no more than 24% body fat; young men no more than 15%.

Why are obese people also more likely to have high blood cholesterol levels? (High fat, high saturated fat and cholesterol diets.)

Why are obese people more likely to have hypertension? (High salt in diet results in water gain; high fat in diet results in atherosclerosis, etc.)

Why might obese people find aerobic type exercise difficult. (Difficulty moving, feel uncomfortable exercising in view of others, etc.; conversely, fitness contributes to cardiovascular health directly and indirectly.)

☐ *Explain the difference between body weight and body fat by discussing the following:*

Although we typically use the term "overweight," the real concern is with being overfat. Body mass is composed of muscles and fat, among other things.

An athlete with highly developed muscles might weigh more than average. However, since his or her additional weight is from muscles, not fat, the added weight is not of concern.

To get a true assessment of the amount of body fat, a fold of skin (and the fat under it) can be measured with a specially designed caliper. [Note: If you will be using the skinfold caliper in Unit VIB, elaborate on its use at this time.]

## MAIN ACTIVITY

## Body Weight and Calories

☐ *Introduce the relationship between activity level, caloric intake and body weight. The following is provided as a guideline for discussion.*

Body weight (body fat) is affected by the number of calories you eat daily and your activity level.

You can calculate your current caloric needs and develop a plan for losing one pound of fat in one week by completing Calculate Your Caloric Needs (SH-VI).

☐ *Distribute student handout. As needed, help students complete and interpret the results.*

## CONCLUSION

## Eating on Cue

☐ *Inform students of the relationship between weight control, internal and external cues. Conduct a discussion using the following as guidelines.*

The mathematical formula for gaining and losing fat is fairly simple. Is it easy for Americans to stay fit? (No; many Americans have a higher percentage of body fat than they should.)

Certain cues tell us when to eat. What would be "internal cues" to hunger? (Stomach pains, light headedness.)

What would be external cues to hunger? (Smell of food, pictures of appealing food, sight of food, suggestion to eat.)

Many thin people are influenced by internal cues while fat people are influenced by external cues. Why would a person who responds to external cues tend to be fat? (Does not eat when he or she actually needs the calories.)

What could a fat person who responds to external cues do to improve his or her eating behavior? (Identify external cues, control external cues, control act of eating, reward success in controlling eating behaviors.)

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts, you may want to introduce some of the Additional Considerations.*

Can students describe the relationships between body fitness and cardiovascular health, blood cholesterol, exercise, stress management, blood pressure?

Can students predict their caloric needs at different activity levels?

Can students explain why a person who responds to external rather than internal eating cues is likely to be fat?

## ADDITIONAL CONSIDERATIONS

## More on Weight

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

Many adult Americans gain an average of one pound a year. Why is this?

Are heavy bones the cause of overweight?

Is being overweight an inherited condition?

What social situations or events encourage individuals to overeat or eat too much of the wrong type of foods? (Parties, TV-watching, sport events, etc.) What can a person do to avoid overeating during each of these social situations or events?

How might you support or help an overweight friend or family member who is trying to lose weight?

What snack or party foods could you serve that would be low in calories and healthy for your heart? (Unsalted popcorn, fruit salad, fruit juices, vegetable slices, etc.) (Consumer Issue)

While studying for a school exam, Fred frequently eats a bag of chocolate chip cookies. Fred notices he is gaining weight and would like to break this habit. What advice can you offer Fred?

How do food advertisements contribute to obesity? Are food advertisements internal or external cues? (Consumer Issue)

# UNIT VIB

## Body Fitness Self-Assessment

**Materials**

- Cardiovascular Health Self-Assessment for each student
- Transparency, Approximate Desirable Weights for 15-Year-Olds to 18-Year-Olds (TM-VI.1) and overhead projector
- Optional Student Handout, Body Fitness for 14-Year-Olds to 18-Year-Olds (SH-VI.I)
- Tape measure
- Scale in the classroom or access to one at nurse's office

**Preparation**

- Read Health Review for Teachers and review Learning Opportunity

**Option**

- Use skinfold calipers to measure the number of millimeters of fat at the right tricep muscle of each student. Refer to *Technical Manual: Health Related Physical Fitness* for details. Augment the "Body Fitness" column of SH-I with SH-VI.

# Learning Opportunity

## INTRODUCTION

## Best Weight

☐ *Help students complete the body fitness column of their self-assessment. Use the transparency Approximate Desirable Weights for 15-Year-Olds to 18-Year-Olds and directions such as these:*

> You will be looking at a chart that lists approximate desirable weight for 15-year-olds to 18-year-olds. It is important to recall that this chart will be "off" for people with highly developed muscles and low body fat.
>
> You first must know your height; write your height in feet and inches. If you do not know your height, you may use the yard stick or tape measure. If you are a male who is 5' 7", your recommended weight is 137. If you are a female who is 5' 7", your recommended weight is 131. Because this is just an approximate recommended weight it is acceptable to be within five pounds of this figure.
>
> What is your recommended weight? What range — five pounds over and five pounds under — is acceptable? What is your present weight? Compare your recommended weight to your present weight to determine how many pounds you are overweight or underweight, or if your weight is about right. (Note: Students who do not know their weight may use the scale.)

## MAIN ACTIVITY

## Self-Assessment

☐ *Instruct students to take out their Cardiovascular Health Self-Assessment.*

Look at the column titled "Body Fitness." Circle the box that applies to you.

## CONCLUSION

## Weight Control

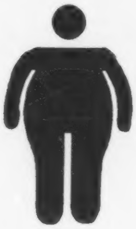
☐ *Conclude this Learning Opportunity by discussing points such as these:*

If you wish to lose some weight, you may incorporate some tips we discussed earlier into your eating and activity habits. A slow gradual weight loss is more desirable than a "crash diet."

What are some specific things you can do to maintain or lose weight?

# Body Fitness Is Related to Cardiovascular Health in Many Ways

Cardiovascular Disease



Blood Cholesterol High

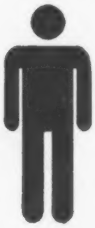
Blood Pressure High

Exercise May Be Difficult

Stress Management Difficult

Overweight

Cardiovascular Health



Blood Cholesterol Normal

Blood Pressure Normal

Exercise Will Be Easier

Stress Management Improved

Normal Body Weight

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TM-VI.1

# Approximate Desirable Weights for 15-Year-Olds to 18-Year-Olds

| MALES | | FEMALES | |
|---|---|---|---|
| Height | Weight | Height | Weight |
| 5' 1" | 116 | 4' 8" | 96 |
| 5' 2" | 119 | 4' 9" | 98 |
| 5' 3" | 122 | 4' 10" | 100 |
| 5' 4" | 125 | 4' 11" | 104 |
| 5' 5" | 129 | 5' 0" | 106 |
| 5' 6" | 133 | 5' 1" | 109 |
| 5' 7" | 137 | 5' 2" | 112 |
| 5' 8" | 140 | 5' 3" | 115 |
| 5' 9" | 145 | 5' 4" | 120 |
| 5' 10" | 149 | 5' 5" | 123 |
| 5' 11" | 153 | 5' 6" | 127 |
| 6' 0" | 157 | 5' 7" | 131 |
| 6' 1" | 161 | 5' 8" | 135 |
| 6' 2" | 165 | 5' 9" | 139 |
| 6' 3" | 170 | 5' 10" | 143 |

The above chart gives a rough idea of desirable weights for 15- to 18-year-olds. Individuals may be within five pounds of the above weights.

Adapted from a chart by the Metropolitan Life Insurance Company. Modified for 15- to 18-year-olds using 1979 guidelines set by the Food and Nutrition Board, National Academy of Science, National Research Council, Washington, DC.

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SH-VI

# Calculate Your Caloric Needs

A. To find out how many calories you need daily to maintain your current weight, do the following:

1. _______ Write your current weight on the line to the left.
2. _______ Write the score that represents your activity level on the line to the left.

**Activity Level**

| Score | If You: |
|---|---|
| 13 | are confined to room or bed |
| 14 | do light work – most Americans |
| 15 | are active on weekends |
| 16 | do aerobic exercise three times weekly |
| 17 | are a competitive athlete – in training, working out, competing at all times |

Multiply your current weight times your activity level
current weight × activity level = daily calories needed

If you want to lose weight, it is best to lose up to one or two pounds a week. Since each pound is 3,500 calories, 500 fewer calories daily would result in a one-pound loss in one week. The best way to lose weight is to reduce your caloric intake and increase your activity level.

B. To find out how many more calories you will burn daily if you increase your activity score to the next higher level:

1. Multiply your current weight times your activity level plus 1

   current weight × activity level plus 1 = calories needed, next activity level

2. Subtract your actual daily calories needed from the calories needed at the next activity level

   calories needed next activity level − daily calories needed = calories burned daily

C. To find out how many fewer calories you should eat daily to lose one pound in one week if you increase your activity level:

Subtract the increased calories burned daily from 500
500 − increased calories burned daily = fewer calories eaten daily

D. In order to gain weight, maintain or increase your activity level and increase your caloric intake. To gain one pound in one week, how many more calories should you eat daily if you increase your activity by one level?

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SH-VI.I

# Body Fitness for 14-Year-Olds to 18-Year-Olds

| Males | Females |
|---|---|
| 6mm triceps skinfold<br>(10% body fat)<br>Note: Extremely low body fat can be harmful<br>70 | 11mm triceps skinfold<br>(20% or less body fat)<br>Note: Extremely low body fat can be harmful<br>70 |
| 7mm-8mm triceps skinfold<br>(11% to 15% body fat)<br>60 | 12mm-15mm triceps skinfold<br>(21% to 24% body fat)<br>60 |
| 9mm-10mm triceps skinfold<br>(16%-18% body fat)<br>50 | 16mm-17mm triceps skinfold<br>(25% to 27% body fat)<br>50 |
| 11mm-12mm triceps skinfold<br>(19% to 20% body fat)<br>40 | 18mm-19mm triceps skinfold<br>(28% to 29% body fat)<br>40 |
| 13mm-14mm triceps skinfold<br>(21% to 22% body fat)<br>20 | 20mm-21mm triceps skinfold<br>(30% to 31% body fat)<br>20 |
| 15mm or greater triceps skinfold<br>(more than 22% body fat)<br>10 | 22mm or greater triceps skinfold<br>(more than 31% body fat)<br>10 |

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## AT A GLANCE

## UNIT VII

# Tobacco

### OBJECTIVES

The student will:

- Describe the short-term and long-term effects of tobacco on the body
- Predict the possible effects of personal tobacco use

### TEACHING TIME

One to two periods

### LEARNING OPPORTUNITIES

Health Secret of the Universe
Tobacco Use Self-Assessment

### TRANSPARENCY MASTERS

None

### STUDENT HANDOUTS

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Distributed during Unit I

### KEY TERMS

tobacco
dipping tobacco
chewing tobacco
sidestream smoke
nicotine
tar
ammonia
estrogen
toxic
carbon monoxide
arsenic
cigarettes

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

## Using Tobacco — A Deadly Habit

Cigarette smoking is a major risk factor of coronary heart disease. People who smoke more than a pack a day are three times more likely to develop heart disease than non-smokers.

The likelihood of developing a heart attack and dying from a heart attack increases the longer one has smoked, the more cigarettes are smoked daily, and the more the smoke is inhaled.

Although most research has been done on the effect of cigarette smoking and heart disease, the effects of dipping or chewing tobacco, smoking a pipe or cigars, or smoking marijuana also have been studied.

*Dipping or chewing tobacco* also contribute to heart disease. Snuff dipping consists of placing a pinch of powdered tobacco (which is sold in cans) between the cheek and gum. Chewing tobacco consists of placing leaf tobacco (which comes in a pouch) or plug tobacco (in the form of a brick) in the gingival buccal area near the inner cheek.

*Pipe and cigar* smokers who inhale also increase their risk of developing coronary disease, though to a lesser extent. The risk for pipe and cigar smokers who do not inhale may be less.

*Marijuana,* which does not contain the same drugs (including nicotine) found in cigarette, pipe, cigar, dipping or chewing tobacco, is not currently linked to cardiovascular disease. However, marijuana smoke contains 50% more cancer-causing agents than tobacco smoke.

## What's in Tobacco, What It Does

Cigarette tobacco contains a variety of toxic ingredients. It is unknown whether a single ingredient or combination of ingredients below contributes to heart disease:

Tar – collects in the lungs; contributes to lung cancer
Nicotine – increases rate of heart beat and need for oxygen; may constrict coronary arteries; is a habit-forming drug
Ammonia – burns nose and throat
Arsenic – poisons the body
Carbon Monoxide – reduces available oxygen; damages blood cells
Hot gases – destroy cilia needed to cleanse lungs

Low-tar and low-nicotine cigarettes offer little, if any, protection against heart disease. Heavy smokers, accustomed to maintaining a specific level of nicotine, may smoke more low-tar cigarettes. Also, toxic ingredients other than tar and nicotine may be present at high levels.

People who smoke filtered cigarettes are not protected — they have about the same incidence of coronary disease as those who smoke non-filtered cigarettes.

Sidestream smoke recently has been identified as being harmful to cardiovascular health. Individuals who breathe smoke-filled air in their environment increase their likelihood of developing cardiovascular disease. Responsible smokers minimize the degree to which they expose others to their tobacco smoke.

Women who smoke greatly endanger themselves and their ability to bear healthy children. A woman who smokes doubles her chance of developing cardiovascular disease. And a woman under 35 who smokes and uses oral contraceptives multiplies her risk of developing heart disease by 10; this risk increases for women age 35 to 45. Pregnant women who smoke have more miscarriages, premature births and babies who live only a few days than mothers who do not smoke. They also have smaller babies who suffer more health problems.

## What People Can Do

Cigarette smokers who quit using tobacco lower their risk of developing a heart attack within a few months. First of all, the body rids itself of nicotine within a week. Withdrawal symptoms, experienced by some individuals who quit smoking, are strong for one to two weeks only, and the psychological urge to have a cigarette lasts for about three months, sometimes longer. In time, an ex-smoker's risk of developing cardiovascular disease can be reduced to that of a non-smoker.

# UNIT VIIA

## Health Secret of The Universe

**Materials**

- Box or package that can be opened
- Sheet of paper with phrase: DON'T SMOKE OR USE TOBACCO
- Optional: Clothing such as a cap or cane that would be used by a carnival barker

**Preparation**

- Read the Health Review for Teachers and review the Learning Opportunity
- Place paper in envelope, envelope in box
- Select a student who will deliver, carnival-barker style, the Health Secret of the Universe. The text of the presentation appears at the end of Unit VIIA. The student should be familiar with the speech as well as the secret answer. He or she may wear carnival-barker type clothing while delivering the presentation.

**Options**

- The carnival barker routine may seem dated to some students. If you anticipate that this will be the response of your students, change the setting and role of the presenter. For example, the presenter can be a benevolent alien from outer space, a television or sports personality promoting a health tip. The student presenter may help you identify an approach that will be effective with your students. If a different setting and role are used, coordinate the presenter's clothing and the presentation to the approach. The teacher can play the role of the presenter, if necessary.

# Learning Opportunity

## INTRODUCTION

## Guaranteed: Better Health

☐ *Direct students to take notes during a presentation that brings out the following points:*

Who has seen a magazine ad that offers a product guaranteed to restore youth or restore hair to a bald scalp? Or an old-time medicine show in which a carnival barker offers a health cure or potion?

Our class member, (presenter's name), is going to share a real health secret with you today. (Presenter's name) will give a presentation on the nine benefits this Health Secret of the Universe can provide you. While listening to him/her, make a list of the nine benefits. After listening to the presentation, you will try to identify the Health Secret of the Universe.

## MAIN ACTIVITY

## Presenting the Secret

☐ *Have students listen and take notes while class member, with appropriate clothing and enthusiasm, presents Health Secret of the Universe.*

# Health Secret Of The Universe

Ladies and gentlemen! I have for you today, in this very box, the Health Secret of the Universe. This secret will solve some of the ailments of the modern day children, teens and adults.

I'm talking to each one of you! Would you like to have *more energy on less sleep?* The answer's in this box. Or perhaps you're troubled by premature aging? A *great complexion* is in this box. Yes! This secret works on the outside as well as the inside. The health wonder in this box will help you *digest food better with less stomach upset.* You will even have a better *sense of smell and taste.*

Does hard work bother you? Worry no more for with this secret you can *work harder with less sweat.* And this Health Secret of the Universe will help you *breathe easier* during both the day and the night. All this, and the health secret will actually *lower the rate at which your heart works.* And if that's not enough, this secret will *reduce your risk of heart attack or heart disease or lung cancer.*

Listen closely while I repeat one more time! This health secret of the universe is guaranteed to give you:

One: MORE ENERGY WITH LESS SLEEP – Plenty of energy to party or study hard.

Two: A GREAT COMPLEXION – Be the envy of all the guys and girls.

Three: BETTER FOOD DIGESTION WITH LESS STOMACH UPSET – Enjoy hot and spicy foods.

Four: A BETTER SENSE OF TASTE AND SMELL

And it will let you:

Five: WORK HARDER WITH LESS SWEAT – Win the track meet every time.

Six: BREATHE EASIER – Look calm and relaxed after hurrying to get from one class to another.

Seven: LOWER YOUR HEART RATE – Be able to exercise longer and look great.

Eight: REDUCE YOUR RISK OF HEART ATTACK OR HEART DISEASE – Enjoy sports for many years.

Nine: REDUCE YOUR RISK OF LUNG CANCER – Live your life to the fullest.

How much do I want for this fountain of youth, this Health Secret of the Universe? No, not a million, thousand or a hundred dollars. This secret is available to each one of you, here today. In a moment, someone will be selected to read the secret out loud.

☐ *Follow up the presentation by thanking the student presenter and asking him/her to momentarily step aside. With the help of class members, list the nine health benefits on the blackboard. Write the heading "Health Secret of the Universe" on the blackboard and have students list whatever they believe to be the answer. Do not attempt to "edit" answers at this point.*

☐ *Reveal the secret by selecting another student to open the box, then envelope, then read:*

DON'T SMOKE OR USE TOBACCO

☐ *Write the phrase "DON'T SMOKE OR USE TOBACCO" under the blackboard heading, "Health Secret of the Universe." Erase incorrect and leave correct answers on the board. Review the correct answers, linking not using tobacco to specific health, economic and social benefits important to your students. The following questions may serve as guidelines:*

How can these benefits help your socially? (You can enjoy doing more things, compete or participate in sports, have a better complexion and so look better, stay in shape because you can be more active, etc.)

Are there economic benefits to not smoking? (Yes, cigarettes, cigars, dipping and chewing tobacco cost money; clothes that smell like tobacco smoke have to be washed more frequently and wear out sooner, and cigarette burns ruin clothes.)

Advertising presents smoking as glamorous, sexy, an expression of freedom. Is it?

## CONCLUSION

## Smoking and Tobacco Risks

☐ *Conduct a mini-lecture or discussion on tobacco, using the following questions as guidelines:*

Tobacco is available in what forms? (Cigarettes, cigars, pipe tobacco, dipping and chewing tobacco.)

Do all forms of tobacco contribute to poor health? (In different ways, and to a different extent, yes. Although the focus of this program is heart disease, tobacco also contributes to lung and other cancers and even to an increase in the number of colds.)

Do dippers and chewers also risk developing cardiovascular disease? (Yes. So do pipe and cigar users who inhale, but to a lesser extent. Dippers, chewers, pipe and cigar smokers greatly risk developing cancer of the oral cavity, or mouth.)

(Note: The following discussion of the use of estrogen-containing birth control pills may be a sensitive issue in some communities.) Women who smoke cigarettes and take medication with the drug estrogen, a drug in many types of birth control pills, have a much higher chance of developing heart disease. How might a woman who smokes and uses birth control pills with estrogen reduce her risk of developing heart disease? (She could quit smoking. Or she could tell her gynecologist that she is a smoker; they might decide on a low-estrogen birth control pill or an alternative method of birth control.)

What is in tobacco that is toxic or poisonous? (There are many toxic ingredients in tobacco. Tar and nicotine are just two of the toxic ingredients. These are well-known because they are listed on cigarette packages. In addition, tobacco contains ammonia, arsenic, carbon monoxide and, when smoked, hot gases; the amount of these is not listed on cigarette, cigar or chewing tobacco packages.) (Note: While discussing the above, write the following on the board:)

### Poisons in Tobacco

Tar
Nicotine
Ammonia
Carbon Monoxide
Arsenic
Hot Gases (when smoked)

What is the habit-forming drug in cigarette pipe, cigar, dipping and chewing tobacco? (Nicotine)

Is marijuana similar to and does it have the same effects as tobacco in cigarettes, pipes, cigars, dipping or chewing tobacco? (No. Marijuana is different. For example, marijuana contains no nicotine. So far, marijuana has not been linked to heart disease. However, marijuana smoke contains 50% more cancer-causing agents than tobacco smoke.)

Why do people use tobacco if it is harmful and an expensive habit?

How can you support a friend or relative who is quitting a tobacco habit?

What steps might you take to stop using tobacco?

How can you turn down people who are pressuring you to start smoking or chewing tobacco?

"Sidestream smoke," tobacco smoke in the air, is harmful to people who breathe it. What steps might a smoker take to reduce the risk of exposing himself or herself as well as others to sidestream smoke? (Smoke in well-ventilated areas or smoke outside; avoid smoking in close non-ventilated areas where tobacco smoke collects.)

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If they understand the concepts, you may want to introduce some of the Additional Considerations.*

Can students identify and describe the short-term and long-term effects of smoking or using tobacco?

Can students recognize forms in which tobacco is available?

Do they understand that smoking cigarette tobacco has different health implications than smoking marijuana?

Do students know that nicotine is the habit-forming drug in tobacco?

Do students know that nicotine and tar are only two of many toxic ingredients in tobacco?

## ADDITIONAL CONSIDERATIONS

## More on Tobacco

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

Using tobacco can produce the opposite of the nine healthful benefits described in the Learning Opportunity. Using these nine benefits as a guideline, what are the harmful effects of smoking or using tobacco? (1. Less energy yet must sleep more; 2. Premature aging; 3. Poor food digestion resulting in upset stomach; 4. Faster heart rate; 5. Poor sense of taste and smell; 6. Higher chance of a heart attack; 7. Higher chance of lung cancer; 8. More sweat while working and cannot work as hard; 9. Difficulty breathing.)

Some of the effects of using tobacco are short-term — they happen almost immediately or within the first several years — while others are long-term and happen after 10, 20 or more years of using tobacco. Identify which effects are short-term and which long-term. (#6 and #7 above are long-term effects.)

Should a smoker who wants to protect his or her heart and cardiovascular system switch to using chewing tobacco? What effects would this have on overall health? (Consumer Issue)

Carmen has been smoking two years. Because she hasn't developed hypertension, she feels that she is not the kind of person who develops hypertension and can continue smoking with no problem. Is she right or wrong?

Can a smoker protect himself or herself against harm from tobacco by switching to a low-tar and nicotine brand? Why or why not? (Consumer Issue)

How much money would a person spend on tobacco in one year if one pack is smoked daily?(Consumer Issue)

Tobacco companies have learned that if a person is a non-smoker until age 21, he or she will very likely be a non-smoker for life. How might this fact influence tobacco advertisements?

Advertisers develop commercials designed to encourage people to smoke cigarettes. What information might be in an anti-smoking commercial? Develop a 30-second anti-smoking commercial. (Consumer Issue)

# UNIT VIIB

## Tobacco Use Self-Assessment

**Materials**

- Student handout, Cardiovascular Health Self-Assessment (SH-I), for each student

**Preparation**

- Read the Health Review for Teachers and review the Learning Opportunity

# Learning Opportunity

## INTRODUCTION AND MAIN ACTIVITY

## Self-Assessment

☐ *Prepare students to complete the blood pressure portion of the Self-Assessment by directing them to:*

Take out your Cardiovascular Health Self-Assessment.

Look at the tobacco use column. Identify and circle the box which best describes your typical use of tobacco. Enter your score in the space provided below.

(Note: Discussion of the use of estrogen-containing birth control pills may be a sensitive issue in some communities.) Your score for tobacco use does not take into consideration whether or not you use estrogen, a drug found in many birth control pills. If you smoke and use estrogen, your danger of developing heart disease is about 10 times greater. Therefore your score for this column would actually be zero.

## CONCLUSION

## Smoking Sense

☐ *Conduct a discussion using the following questions as guidelines:*

If you currently use tobacco, how might you reduce or eliminate its use?

How might smokers and non-smokers alike help a friend who is quitting smoking?

How can you reduce your exposure to sidestream smoke?

## AT A GLANCE

## UNIT VIII

# Stress Management

### OBJECTIVES

The student will:

- Describe the physiological effects of stress on the body
- Identify sources of personal stress
- Analyze stress management techniques

### TEACHING TIME

One to two periods

### LEARNING OPPORTUNITIES

Cardiovascular Effects of Stress (VIII-X)
Stress Management Self-Assessment (VIII-B)

### TRANSPARENCY MASTERS

Stress Responses and Management (TM-VIII)
Potentially Stressful Events for Adolescents (TM-VIII.1)

### STUDENT HANDOUT

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Distributed during Unit I

### KEY TERMS

| | | |
|---|---|---|
| stress | stress response | stress management |

### EXAMINATION QUESTIONS

An examination is presented in the appendix of this Teaching Handbook. Questions from the exam that relate to this unit can be incorporated into a quiz on this unit.

# Health Review for Teachers

## Effects of Stress on Our Bodies

Poor stress management is a risk factor of cardiovascular disease. Stress triggers a response known as the fight or flight response, which is the body's automatic physiological response to an excessively stressful life event. The body, unable to distinguish between physical or emotional sources of excess stress, responds to excess stress by preparing the body to fight or flee.

Although the fight or flight response was appropriate for ancient man who had to fight or flee from his enemies, this response is not helpful to manage the typical stresses of modern life — typically emotions, ideas, memories or expectations.

The stress-induced fight or flight response involves a variety of physiological effects upon the cardiovascular system. The heart beats more rapidly to pump blood throughout the tissues with greater speed; oxygen and nutrients are rapidly carried to cells in preparation for fighting or fleeing. As the heart rate increases, blood pressure rises. Breathing becomes rapid and shallow, making less oxygen available to the blood. Muscles become tense in preparation for combat or escape. Blood flow to the digestive organs decreases. Blood flow to the brain and major muscles increases.

If the body infrequently or occasionally exhibits a fight or flight response, then returns to a normal relaxed state, the cardiovascular system usually is not impaired. But if the body frequently and regularly reacts to situations or events with a fight or flight response without completely relaxing between responses, the cardiovascular system may be harmed. Such a response may contribute to hypertension, heart attack or angina (chest pain).

## What People Can Do

People who exhibit a fight or flight response excessively can reduce the duration or frequency of such a response by practicing stress management techniques:

Recognize situations, conditions or aspects of their life that contribute to excessive stress.

If possible, limit exposure to excessively stressful events.

Manage the fight or flight response to stress. By returning just one of the physiological effects to a normal, relaxed state, other physiological effects are returned to a normal, relaxed state. For example, when rapid and shallow breathing is replaced with deep, full, relaxed breathing, the heart rate decreases.

Specific techniques for managing stress are not inherited, but developed. Individuals are advised to practice one or more stress management techniques that work for them. A stress management technique should be practiced daily.

Breathing deeply slows the heart rate and aids the relaxation of muscles. One stress reduction technique is to regularly breathe 40 deep breaths throughout each day.

Relaxation exercises, preferably guided by a reading that has been taped and practiced 20 minutes daily can serve to relax.

Listening to music, either relaxation or classical music, can serve as a background for deep breathing or relaxation exercises, or just relaxation.

Engaging in aerobic exercise, a sequence of warm up, aerobic and cool down exercises practiced three or more times weekly aids relaxation. Noncompetitive types of aerobic exercise are best.

# UNIT VIIIA

## Cardiovascular Effects of Stress

### Materials

- Transparency Stress Responses and Management (TM-VIII) and overhead projector
- Cassette tape recorder and recording, "Bell's Relaxation Exercise" (You may make your own recording by taping an oral reading of "Bell's Relaxation Exercise" presented in this unit.)

### Preparation

- Read Health Review for Teachers and review Learning Opportunity
- Prepare and practice playing cassette recording of "Bell's Relaxation Exercise"
- Practice relaxing while listening to "Bell's Relaxation Exercise"
- Prepare transparency

### Option

- You may wish to direct students to relax while listening to a cassette recording of classical music which is calm and peaceful rather than highly emotional. Music specifically designed for relaxation also may be used. Teachers are advised, however, that music specifically designed for relaxation may be controversial in some communities.

# Learning Opportunity

## INTRODUCTION

## Physical Responses to Stress

☐ *Instruct students to imagine how they would feel physically if the following happened to them. Specifically, ask them to identify changes in their heartbeat, breathing and muscles, if they were to face the following situation. Read "A Stressful Stroll" out loud and with emotion: (Note: If you believe the imagery in the following story to be too frightening for your students, modify the story so it is less frightening.)*

A STRESSFUL STROLL

Imagine you are hurrying home alone from the late show at the movie theater. A dark sky is lit only by a crescent moon. When you reach home and enter the front room, you sense from the silence that your family is gone. You call out, "Is anyone home?" but no one replies. Your heart is pounding. You feel your muscles tensing as you look around the room and notice a window is broken. The lamp in front of the window has been knocked to the floor. Your cold hand trembles as you wipe the sweat from your forehead. Did someone enter the house through the window while you were gone? Where is your family?

Your breathing becomes shallow and rapid as you notice the bedroom door is closed tightly and locked. What is behind that locked door? Are your family members tied up and gagged? Is a burglar trapped in the bedroom? Or does this stressful scene have an innocent explanation? You feel your stomach tighten as you consider the possibilities. Should you prepare to fight or should you flee?

☐ *Help students identify physiological responses to stress. The top half of transparency master Stress Responses and Management (TM-VII) may help you present and discuss questions such as these:*

A situation like this is stressful. Your body physiologically responds to stress. In a situation such as this, what changes would occur in your breathing? (Breathing becomes more shallow, making less oxygen available to the blood.)

In a situation like this, what changes would occur in your pulse? (Pulse becomes more rapid as the heart beats more quickly to pump blood throughout tissues with greater speed; oxygen and nutrients are rapidly carried to cells in preparation for fighting or fleeing.)

What would happen to the muscles in response to a situation like this? (Muscles become tense in preparation for combat or escape.)

These are three specific cardiovascular responses to stress. How else does the cardiovascular system respond to stress? (As heart rate increases, blood pressure rises; blood flow to the brain and major muscles increases; blood flow to the digestive organs decreases.)

What causes these physical responses of the cardiovascular system? (A response to a stressful situation; our body tries to protect us from a threatening situation by preparing us for action.)

How would these changes prepare a person for action? (Prepare to fight or flee; increased oxygen to the muscles and brain.)

☐ *Help students recognize that exposure to a stressful situation is not bad, the body typically returns to a relaxed state by presenting the following:*

When you are exposed to a stressful situation, do you remain in a "ready-to-fight-or-flee" state? (No. The problem is typically resolved and your body returns to normal.)

Specifically imagine changes in your heartbeat, breathing and muscles when "A Stressful Stroll" is resolved:

### A STRESSFUL STROLL - RESOLVED

You decide you must be brave and find the answer to this stressful mystery. Upon entering the kitchen, you notice a note on the table from Mom. The note says: "We had an eventful evening. A large bird flew through the closed living room window and directly into the lamp on the table in front of the window. We called an animal protection group. They asked that we rush the bird to their office so they could treat it. We'll be back soon. Your dinner is in the oven. Hope you enjoyed your movie. Mom." You breathe a deep sigh of relief and feel your muscles begin to relax. You hear familiar footsteps coming up the stairs – they're home.

What cardiovascular responses would occur as this stressful problem is resolved? (The opposite of the six reactions described on the top half of Stress Responses and Management (TM-VIII.)

What would happen if the body regularly and frequently reacts to stressful events without completely relaxing between them? (Cardiovascular health may be damaged; hypertension may develop.)

## MAIN ACTIVITY — Managing Stress

☐ *Inform students that by practicing specific stress management techniques, you can help your body return to a normal, relaxed state. The bottom half of Stress Responses and Management (TM-VIII) and questions such as these may be used:*

In some cases, limiting exposure to stressful events can help you resolve a stressful situation. Can you limit exposure to an event that is stressful to you? If not, some techniques may be helpful.

What specific stress management techniques can you use to help your body return to a normal, relaxed state? (1. Recognizing stressful events; 2. limiting exposure to stressful events; 3. breathing deeply; 4. practicing relaxation exercises; 5. listening to relaxing music; 6. exercising.)

Many stressful situations cannot be altogether avoided. The first step in minimizing negative effects is to identify situations or events that are stressful to you. Can you identify a situation that is stressful to you? (Note: If students are unable to identify personally stressful events, you may read out loud from or project Potentially Stressful Events for Adolescents (TM-VIII.1)

Have you noticed that by breathing deeply you relax your body and are able to manage stress? Compare how you feel before and after the following exercise: To breathe deeply, imagine that your lungs are composed of three layers. As you breathe in, imagine that the lower layer completely fills with air, the middle layer fills, then the top layer finally fills with air. Practice breathing slowly and deeply ten times.

Practicing relaxation exercises is another way to manage stress. Sometimes people feel relaxed and refreshed the very first time they try a relaxation exercise. Sometimes people feel uncomfortable or silly the first time; they may laugh to cover their embarrassment. Even adults find relaxation exercises difficult at times. Listen and respond to the taped relaxation exercise. See if an exercise like this is relaxing to you.

☐ *Read or play a cassette of Bell's Relaxation Exercise, specifically designed for students, which is located at the end of this unit.*

How do you feel after practicing a relaxation exercise? Most people feel that each time they practice relaxing like this, they feel more relaxed. A relaxation exercise should be practiced about 20 minutes daily. (You may suggest that students make their own relaxation tape by recording their reading of "Bell's Relaxation Exercise" or a self-developed relaxation exercise.)

Have you tried reducing stress by engaging in non-competitive aerobic exercise? Can you identify some types of exercise that meet this description?

## CONCLUSION — Practicing Techniques

☐ *Summarize the content by asking students questions such as these:*

Which stress management techniques do you currently practice?

It is recommended that a specific stress reduction technique be used daily. What three techniques could you practice daily for one week?

What might prevent you from incorporating stress management techniques into your lifestyle?

What would help you incorporate stress management techniques into your daily life?

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts, they may need review or reinforcement. If students understand the above, you may want to introduce them to some of the Additional Considerations.*

Can students identify six cardiovascular responses to stress?

Can students describe these stress management techniques — recognition of stressful events, limited exposure to stressful events, deep breathing, aerobic exercise, and relaxation exercises?

Do students understand how stress management techniques contribute to cardiovascular wellness?

## ADDITIONAL CONSIDERATIONS

## More on Stress

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

How do the six cardiovascular responses to stress prepare one for fighting or fleeing?

Is drinking alcohol a good stress reduction technique? Why or why not? (Consumer Issue)

Write a seven-day plan for stress management. Using at least three techniques discussed, state the period of time and type of technique that will be practiced daily.

# UNIT VIIIB

## Stress Management Self-Assessment

**Materials**

- Student handout, Cardiovascular Health Self-Assessment (SH-I), for each student

**Preparation**

- Read Health Review for Teachers and review Learning Opportunity

# Learning Opportunity

## INTRODUCTION AND MAIN ACTIVITY

## Self-Assessment

☐ *Prepare students to complete the stress management portion of the Self-Assessment by directing them to:*

Take out your Cardiovascular Health Self-Assessment and look at the stress management column. Circle the box that applies to you.

## CONCLUSION

## Key to Stress Reduction

☐ *Conduct a discussion using the following questions or guidelines:*

Why is it important to identify sources of personal stress? (Key step to stress reduction)

How can you add more stress management techniques to your weekly routine?

# Bell's Relaxation Exercise

## Background Information on Bell's Relaxation Exercise

Bell's Relaxation Exercise has been specially designed for use with school-age students in the classroom. The exercise is designed to allay apprehension and fears, usually manifested by noncompliance and giggling, that certain students may have about relaxation in the classroom. Students are asked to perform specific imaginary tasks that help them tense and relax specific muscle groups.

Although this exercise can be read to the students, the use of a cassette recording of this exercise greatly enhances the experience. By using a cassette recording, the teacher is free to participate in the exercise or observe student participation.

The introduction to the relaxation exercise is very important. Students often are comforted by learning that relaxation can be a difficult task, even for adults. It is sometimes helpful to discuss the role of laughter and giggling in covering feelings of embarrassment about having a new experience. Introductory remarks such as these can help students perform the exercises more effectively. In addition, dimming bright lights allows eyes to relax more completely.

## Exercise

Read or play a cassette recording of the following:

We are going to do a relaxation exercise. I am going to show you how to relax.

First, I want you to sit as comfortably as you can in your chair. Put both feet on the floor and remove any books from under your chair if they are in your way. Place your arms in a comfortable position.

I would like for you to blink your eyes several times and then close your eyes for a few seconds. That's right. Again, blink your eyes several times and then close them. You blink your eyes to help relax them. You close your eyes to help you concentrate. Now. . .your eyes should remain closed.

I want you to pretend that you are a turtle out sunning yourself on the river bank. The sun feels warm on your back and neck. You feel comfortable and relaxed, but now, there is some danger. You have to draw your head into your shell. Bring your shoulders up to your ears, as though you don't have a neck. Now. . .the danger is gone, let your shoulders drop, feel the warm sun on your neck and back and shoulders. You feel comfortable and relaxed. Pure relaxation, deeper and deeper.

I want you to pretend that there is a fly on your nose. You can't use your hand to shoo him away, so you have to wrinkle your forehead and squint your eyes. Make a face! Move your lips, purse your lips and try to blow the fly away. Puff out your cheeks to get that fly off your nose. The fly is gone now. Your face feels relaxed, your forehead,eyes, cheeks and your mouth feel relaxed.

Let your right arm hang by your side. Pretend that you have a lemon in your right hand. I want you to squeeze the lemon. Squeeze all of the juice out of the lemon.Squeeze it as tightly as you can. Now. . . let the lemon fall to the floor. See it gently bounce and gradually disappear. Feel the relaxation in your right hand and arm.

Let your left arm hang by your side. Pretend that you have a lemon in your left hand. I want you to squeeze the lemon. Squeeze all of the juice out of the lemon. Squeeze it as tightly as you can. Now. . . let the lemon fall to the floor. See it gently bounce and gradually disappear. Feel the relaxation in your left hand and arm.

Soon, I'll ask you to take a deep breath and hold it for a few seconds while I count to five. After I have counted to five, you are to let all of the air hiss out and feel relaxed. Ready? One, two three, four, five. Let the air hiss out and feel relaxed.

Now I want you to put both feet on the floor.Pretend you are pressing your feet as hard as you can into some sand on the beach. Press down so hard that some of the sand squeezes between your toes. Feel the tension in your legs and feet as you press down. Relax, now . . . I want you to relax your feet and legs. Lift them up out of the sand and shake the sand off of your feet. As you return your feet to the ground, your feet and legs feel comfortable and relaxed. Pure relaxation, deeper and deeper. Now I want you to press down with both of your feet again, press down into the sand on the beach and leave your footprints. Feel the tension in your legs and feet as you make footprints in the sand. Relax, now. . . I want you to relax your feet and legs. Lift them up out of the sand and shake the sand gently off your feet. As you return your feet to the ground now, your feet and legs feel comfortable and very relaxed.

Be aware of the relaxation in your legs and feet — they are relaxed.

Be aware of the relaxation in your back and shoulders — they are relaxed.

Be aware of the relaxation in your hands and arms — they are relaxed and warm.

Your face and eyes feel. . . comfortable and relaxed.

You feel calm, comfortable and relaxed, but your body has been energized by this period of relaxation. When you are ready. . . when you feel comfortable. . . slowly open your eyes.

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TM-VIII

# Stress Responses and Management

## Cardiovascular Responses to Stress

1. The heart beats more rapidly to pump blood throughout the tissues with greater speed; oxygen and nutrients are rapidly carried to cells in preparation for fighting or fleeing.
2. As the heart rate increases, blood pressure rises.
3. Breathing becomes rapid and shallow, making less oxygen available to the blood.
4. Muscles become tense in preparation for combat or escape.
5. Blood flow to the digestive organs decreases.
6. Blood flow to the brain and major muscles increases.

## Specific Techniques for Managing Stress

1. Recognize sources of personal stress.
2. Limit exposure to stressful events.
3. Breathe deeply.
4. Practice relaxation exercises.
5. Listen to relaxing music.
6. Exercise aerobically.
7. Other techniques.

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TM-VIII.1

# Potentially Stressful Events for Adolescents

Arguments with family members
Becoming a parent
Beginning or ending a job
Being arrested
Change in church activities
Change in dating habits
Change in living environment
Change in schools
Christmas season
Death of a close family member
Death of a close friend
Difficulties with girlfriend or boyfriend
Failure in a course
Final year of middle school
Financial difficulties
First year of high school
Getting a driver's license
Jail term
Marriage
Minor illness or injury
New brother or sister
Pregnancy
Problems with teacher or school counselor
Severe personal illness or injury
Suspension from school
Tests or exams
Vacation

These events are listed alphabetically. Each person's response to events such as these is highly unique. While an event may be highly stressful for one person, it may only be mildly stressful for another.

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# AT A GLANCE

# UNIT IX

## Total Cardiovascular Self-Assessment

### OBJECTIVES

The student will:

- Contrast positive personal behaviors that contribute to cardiovascular health and negative behaviors that contribute to cardiovascular disease
- Identify ways to personally promote cardiovascular health

### TEACHING TIME

One period

### LEARNING OPPORTUNITY

Action Plan for a Healthy Heart

### TRANSPARENCY MASTER

Estimating Blood Pressure and Blood Cholesterol — Men (TM-IX)
Estimating Blood Pressure and Blood Cholesterol — Women (TM-IX.1)

### STUDENT HANDOUTS

Cardiovascular Health Self-Assessment (SH-I)

- One per student
- Distributed during Unit I

Cardiovascular Health Tip: Exercise (SH-IX.1)
Cardiovascular Health Tip: Cholesterol and Saturated Fats (SH-IX.2)
Cardiovascular Health Tip: Sodium (SH-IX.3)
Cardiovascular Health Tip: Body Fitness (SH-IX.4)
Cardiovascular Health Tip: Use of Tobacco (SH-IX.5)
Cardiovascular Health Tip: Stress Management (SH-IX.6)

### KEY TERMS

No new terms are presented in this unit

### EXAMINATION QUESTIONS

No examination questions are specifically based on this unit. This unit gives students the opportunity to apply information presented in the previous eight units. Students can take the comprehensive exam in the appendix after completing this unit.

# Health Review for Teachers

## Choices for Cardiovascular Health

Cardiovascular health is influenced by factors beyond our control (age, gender, family history) as well as factors within our control (blood pressure, aerobic exercise, dietary choices, weight control, use of tobacco and stress management). These 10 factors individually and collectively influence our cardiovascular health and the contribution of each factor is unique for each individual.

Our state of cardiovascular wellness and protection against cardiovascular disease is dynamic rather than static. Daily choices, over a period of time, influence our cardiovascular health. Together, an individual's inherited characteristics and lifestyle choices may serve to provide low, moderate or high protection against cardiovascular disease.

## Assess, Plan, Act

Cardiovascular health may be protected by assessing one's current degree of risk, developing an action plan for a more heart-healthy lifestyle, and actively following the plan. To be effective, changes in lifestyle must be long-term or permanent rather than temporary. Though such changes are made with great difficulty, our belief in the importance of the change facilitates the process.

It often is more effective to make small changes in specific areas instead of changing an entire lifestyle. Also helpful is positive reinforcement from peers and others.

The student handout, Cardiovascular Health Self-Assessment, can serve as a guideline for assessing and increasing cardiovascular health. The students can assess their personal score for each of the ten factors. Together these form a total score, an approximation of their degree of protection against cardiovascular disease. The approximate value of the scores, which may range from a high of 760 to a low of 90 are presented below.

Approximate Protection
Against Heart Disease

| | |
|---|---|
| High | 650 to 760 |
| Moderate/High | 530 to 640 |
| Moderate | 420 to 520 |
| Low/Moderate | 270 to 410 |
| Low | 90 to 260 |

Once students know their current degree of protection, they can recalculate their score at future times. Cardiovascular health can be reassessed, a new action plan developed and followed. Teachers may or may not elect to structure class time for this recalculation.

# UNIT IX

## Action Plan For a Healthy Heart

**Materials**

- Transparency Masters, Estimating Blood Pressure and Blood Cholesterol (TM-IX and TM-IX.1)
- Student handout, Cardiovascular Health Self-Assessment (SH-I), one for each student
- Student handout, Cardiovascular Health Tip (SH-IX.1) through (SH-IX.6); one per each group of students developing an Action Plan for the related problem

**Preparation**

- Read the Health Review for Teachers and review Learning Opportunity
- Prepare transparency
- Duplicate copies of the six Cardiovascular Health Tips

**Option**

- Use one or more copies of related brochures or books such as those listed on Health Tip Sheets and in the bibliography at the end of the book.

# Learning Opportunity

## INTRODUCTION

## Long-Term, Permanent Health

☐ *Prepare students to add up final scores on their Cardiovascular Health Self-Assessment by directing them to:*

Take out your Cardiovascular Health Self-Assessment.

Recheck your score for each of the 10 categories.

If you were unable to have your blood pressure taken, you can roughly estimate your blood pressure from your height and weight. Similarly, if you are unable to determine the approximate amount of animal or saturated fats in your diet, you can estimate your blood cholesterol level from your weight and height. Use the chart, Estimating Blood Pressure and Blood Cholesterol.

Add your 10 scores together to determine your total score. Write your total score and today's date in the first pair of boxes.

☐ *Help students analyze their profile. Discussion questions such as these may be used:*

What is your approximate degree of protection against heart disease?

Approximate Protection
Against Heart Disease

| | |
|---|---|
| High: | 650 to 760 |
| Moderate/High: | 530 to 640 |
| Moderate: | 420-520 |
| Low/Moderate: | 270-410 |
| Low: | 90-260 |

(Note: You may tally individual scores to help students see the range of scores.)

Which factors help you the most? (Individual factor scores of 70 to 100.)

Which factors harm you the most? (Individual factor scores of 0 to 30.)

Which factors that you control harm you the most?

How can you increase your protection against heart disease?

Are you protected if you change lifestyle habits on a temporary basis? (Not really — changes must be long-term and permanent.)

Who has permanently changed or developed a habit that resulted in better cardiovascular health? What did you do? What helped you?

What is the best way to permanently change a habit? (1. Identify a change you really want to make; 2. Make one change at a time; 3. Stick with it.)

## MAIN ACTIVITY

## One Change at a Time

☐ *Direct each student to use the Cardiovascular Health Self-Assessment to identify one factor he or she would like to change. Questions or comments such as these may be used:*

Look at your Cardiovascular Health Self-Assessment; identify one factor you would like to change. That factor must be important to you and be something you believe you can change.

☐ *Group students together in pairs or small support groups of students who wish to change the same behavior. Give each group the Cardiovascular Health Tip (SH-IX.1 through SH-IX.6) related to the factor they are changing. Comments such as these may be used:*

Working together with your group, discuss and write down ideas for changing that factor. You may recall class sessions and refer to your notes or Health Tips for ideas.

☐ *Direct students to write down a specific action plan for changing a specific behavior over the next two weeks. Direct students using the following comments as guidelines:*

Develop an action plan for changing a specific behavior over the next two weeks. Write down what you will do and how you will do it.

Identify a friend in class or someone at home who will support your change in a health habit.

Each morning during the next two weeks, read your action plan. Think about working to make your plan work.

Each evening, recall how well you met your goal for that day. You may give yourself a grade, A, B, C, D, F, for how well you met your goal that day.

(Note: Teachers may optionally provide students classroom time to rate their daily performance. Students may do this the first five minutes of each class for the next two weeks.)

## CONCLUSION

## Re-Evaluating Scores

☐ *Inform students that they will re-calculate the total score on their Cardiovascular Health Self-Assessment after two weeks. The following comments may be used as guidelines:*

After following your action plan for two weeks, re-calculate your Total Score using your Cardiovascular Health Self-Assessment. Re-evaluate your score for each of the 10 factors. You then can continue the process of developing, following and evaluating your Action Plan.

## TEACHER CHECKPOINT

## Are Concepts Clear?

☐ *If students do not understand the following concepts they may need review or reinforcement. If they understand the concepts, you may want to introduce some of the Additional Considerations.*

Do students understand that their personal behaviors influence their state of cardiovascular health?

Can students identify personal behaviors that contribute to or reduce cardiovascular health?

Can students use the Cardiovascular Health Self-Assessment to evaluate ways to personally promote cardiovascular health?

Have students developed an appropriate and reasonable Action Plan?

## ADDITIONAL CONSIDERATIONS

## More on Action Plans

☐ *These questions may be used as classroom discussion topics, in-class essay themes, extra credit or homework assignments.*

How can you support a friend who is trying to improve a health behavior?

How can your family support you while you are positively changing a health behavior? Identify some positive changes in health behavior that a family might work on together. (Less salt in cooked food, substitute low-fat milk for whole milk, etc.)

What are some factors or influences that must be resisted while changing a health behavior? (Peer pressure, advertising, etc.)

You may continue to develop Action Plans all term that will improve your cardiovascular health behavior. Do you want to give an end of term award to the student in our class who has the highest end of term score, has made the greatest positive change, or both?

TM-IX

# Estimating Blood Pressure and Blood Cholesterol

**MEN**

**Weight Table**

Look for your height (without shoes) in the first column and then read across to find the category into which your weight (in indoor clothing) would fall.

| **HEIGHT** | **WEIGHT CATEGORY (lbs)** | | | |
|---|---|---|---|---|
| | **A** | **B** | **C** | **D** |
| 5' 1" | up to 123 | 124-148 | 149-173 | 174+ |
| 5' 2" | up to 126 | 127-152 | 153-178 | 179+ |
| 5' 3" | up to 129 | 130-156 | 157-182 | 183+ |
| 5' 4" | up to 132 | 133-160 | 161-186 | 187+ |
| 5' 5" | up to 135 | 136-163 | 164-190 | 191+ |
| 5' 6" | up to 139 | 140-168 | 169-196 | 197+ |
| 5' 7" | up to 144 | 145-174 | 175-203 | 204+ |
| 5' 8" | up to 148 | 149-179 | 180-209 | 210+ |
| 5' 10" | up to 157 | 158-190 | 191-221 | 222+ |
| 5' 11" | up to 161 | 162-194 | 195-227 | 228+ |
| 6' 0" | up to 165 | 166-199 | 200-232 | 233+ |
| 6' 1" | up to 170 | 171-205 | 206-239 | 240+ |
| 6' 2" | up to 175 | 176-211 | 212-246 | 247+ |
| 6' 3" | up to 180 | 181-217 | 218-253 | 254+ |
| 6' 4" | up to 185 | 186-223 | 224-260 | 261+ |
| 6' 5" | up to 190 | 191-229 | 230-267 | 268+ |
| 6' 6" | up to 195 | 196-235 | 236-274 | 275+ |

Because both blood pressure and blood cholesterol are related to weight, an estimate of these risk factors for each weight category is prited at the bottom of the table.

| | | | | |
|---|---|---|---|---|
| **ESTIMATE OF SYSTOLIC BLOOD PRESSURE** | 119 or less | 120 to 139 | 140 to 159 | 160+ or more |
| **ESTIMATE OF BLOOD CHOLESTEROL** | 199 or less | 200 to 224 | 225 to 249 | 250+ or more |

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NOTE: As needed, assist individual students to use the above information to estimate their systolic blood pressure or blood cholesterol level.

TM-IX.1

# Estimating Blood Pressure and Blood Cholesterol

**WOMEN**

**Weight Table**

Look for your height (without shoes) in the first column and then read across to find the category into which your weight (in indoor clothing) would fall.

| **HEIGHT** | **WEIGHT CATEGORY (lbs)** | | | |
|---|---|---|---|---|
| | **A** | **B** | **C** | **D** |
| 4' 8" | up to 101 | 102-122 | 123-143 | 144+ |
| 4' 9" | up to 103 | 104-125 | 126-146 | 147+ |
| 4' 10" | up to 106 | 107-128 | 129-150 | 151+ |
| 4' 11" | up to 109 | 110-132 | 133-154 | 155+ |
| 5' 0" | up to 112 | 113-136 | 137-158 | 159+ |
| 5' 1" | up to 115 | 116-139 | 140-162 | 163+ |
| 5' 2" | up to 119 | 120-144 | 145-168 | 169+ |
| 5' 3" | up to 122 | 123-148 | 149-172 | 173+ |
| 5' 4" | up to 127 | 128-154 | 155-179 | 180+ |
| 5' 5" | up to 131 | 132-158 | 159-185 | 186+ |
| 5' 6" | up to 135 | 136-163 | 164-190 | 191+ |
| 5' 7" | up to 139 | 140-168 | 169-196 | 197+ |
| 5' 8" | up to 143 | 144-173 | 174-202 | 203+ |
| 5' 9" | up to 147 | 148-178 | 179-207 | 208+ |
| 5' 10" | up to 151 | 152-182 | 183-213 | 214+ |
| 5' 11" | up to 155 | 156-187 | 188-218 | 219+ |
| 6' 0" | up to 159 | 160-191 | 192-224 | 225+ |
| 6' 1" | up to 163 | 164-196 | 197-229 | 230+ |
| **ESTIMATE OF SYSTOLIC BLOOD PRESSURE** | 119 or less | 120 to 139 | 140 to 159 | 160+ |
| **ESTIMATE OF BLOOD CHOLESTEROL** | 199 or less | 200 to 224 | 225 to 249 | 250+ |

Because both blood pressure and blood cholesterol are related to weight, an estimate of these risk factors for each weight category is printed at the bottom of the table.

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NOTE: As needed, assist individual students to use the above information to estimate their systolic blood pressure or blood cholesterol level.

# Some Ways to Exercise Your Heart

1. Know which forms of exercise are aerobic and which forms are anaerobic.
2. Replace anaerobic exercise with aerobic exercise.
3. Take the stairs instead of the elevator or escalator.
4. Exercise (swim, run, jog, etc.) with a friend.
5. Schedule regular times for exercise into your weekly schedule — 15 to 30 minutes at a time, three to four times a week.
6. Learn a new aerobic sport and do it.
7. Remember to wear proper shoes and clothing, and warm up/cool down properly.
8. Keep a log of your progress.
9. Enjoy yourself!

## HELPFUL BROCHURES

1. "E is for Exercise," American Heart Association.
2. "Exercise and Your Heart," NIH Publication #81 1677, U.S. Dept. of HHS.
3. "The Principles of Conditioning," American Heart Association, Alameda County Chapter.

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# Some Ways to Limit Saturated Fats and Cholesterol

1. Read nutritional labels on packages of foods.
2. Know which foods are low or high in saturated fats and/or cholesterol.
3. Replace foods high in saturated fats and/or cholesterol with foods that are low in saturated fats/cholesterol.
4. Make a list of a typical day's menu. Cross out foods high in saturated fats/cholesterol and write in a replacement.
5. Avoid "fast food" foods.
6. Try new low-saturated fats/cholesterol foods such as mango, papaya or others.
7. Before you eat a food, think: Is this food high in cholesterol/saturated fats?
8. Substitute low-fat milk for whole milk; low-fat cheese for whole milk cheese.

## HELPFUL BROCHURES

1. "Nutrition Labeling," American Heart Association.
2. "The Way to a Man's Heart," American Heart Association.
3. "Choosing Heart Healthy Cheeses," American Heart Association, Alameda County Chapter.
4. "Cholesterol and Your Heart," American Heart Association.
5. "Eating for a Healthy Heart," American Heart Association.

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CARDIOVASCULAR HEALTH TIP

SODIUM (Salt) | SH-IX.3

# Some Ways to Limit Sodium (Salt)

1. Remember, sodium is the ingredient in salt and "salty" foods that increases your chance of having hypertension (high blood pressure).
2. Know which foods are low, medium, and high in sodium (salt).
3. Don't add salt at the table.
4. Avoid foods high in sodium (salt).
5. Read the lable on prepared and packaged foods—avoid those that list salt or sodium as one of the first three ingredients.
6. Replace a high-sodium food with a low-sodium food.
7. Try low-sodium foods that may be new to you—ricotta cheese, parsnips, bok choy, etc.
8. Before you eat a food think—does this food contain sodium?
9. Avoid "fast food" foods.
10. Cook with only ¼, ½ or a trace of the usual amount of salt.
11. Keep a record of the number of milligrams of salt you use daily.

HELPFUL BROCHURES

1. "Shake the Salt Habit," Alameda County Heart Association.
2. "The Facts About How to Cut Down on Salt," National Kidney Foundation of Iowa, Inc.
3. "Cooking Without Salt," American Heart Association.

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CARDIOVASCULAR HEALTH TIP

BODY FITNESS | SH-IX.4

# Some Ways to Reduce Fat

1. Set a realistic weight reduction goal for yourself—one to two pounds per week.
2. Replace high-calorie foods with low-calorie replacements—eat a baked potato (without butter) instead of french fries.
3. Avoid "fast food" foods.
4. Eat from the four food groups daily, but eat *less*.
5. Men and women should eat about 500 fewer calories daily; for women intake would amount to 1,600 calories daily; for men, about 1,800 calories daily.
6. Avoid empty calorie foods such as candy or soft drinks.
7. Lose weight with a friend.
8. Increase your amount of physical activity. Regularly engage in aerobic exercise.
9. To maintain a current weight, teen-age women should limit themselves to *about* 2,100 calories daily; teen-age men should limit themselves to *about* 2,300 daily. Numbers of calories may vary, depending upon height and weight.
10. Identify social and emotional factors that contribute to a weight gain.
11. Think of yourself as thin.
12. Identify and control the external cues that affect your eating.

HELPFUL BROCHURES

1. "A Guide for Weight Reduction," American Heart Association.
2. "Weight Control Guidance in Smoking Cessation," American Heart Association.
3. Brochures specifically related to exercise or nutrition also may be useful.

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# Some Ways to Stop Using Tobacco

1. Quit all at once or gradually by smoking or chewing less.
2. Limit yourself to fewer cigarettes or dips of chewing tobacco daily.
3. Smoke only the first half of the cigarette; smoke no more than your usual number of cigarettes.
4. Quit with a friend.
5. Wrap a piece of paper around your cigarettes; each time you smoke, unwrap the paper and write the date on it.
6. Replace the cigarette or chewing tobacco in your mounth with sugarless gum.
7. Save the money you would have spent on tobacco to buy yourself something great.
8. Increase the amount of physical exercise you do.
9. Participate in a stop-smoking clinic.

HELPFUL BROCHURES

1. "How to Stop Smoking," American Heart Association.
2. "Everything You Always Wanted to Know About Dipping and Chewing...but were afraid to ask," American Cancer Society.
3. "A Lifetime of Freedom From Smoking," American Lung Association.
4. "Slim and Smokeless," American Cancer Society.

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# Some Ways to Manage Stress

1. Know which situations are stressful to you.
2. If possible, change the stressful situation. If possible, avoid stressful situations.
3. Practice relaxing your body when you feel tense.
4. Breathe slowly and deeply when you feel anxious or tense.
5. Physical exercise or dance can help relax the body.
6. Talk with others about your stressful situation.
7. Listen to peaceful music and relax your body.
8. Take time to do things for yourself every day.
9. If you feel you don't have enough time to do all that you must, prioritize what you must do and do the most important things first.
10. Tape record your personal reading of a stress reduction exercise such as Bell's Relaxation Exercise. Listen and practice relaxing to the tape daily.

HELPFUL BROCHURES

1. "Stress," Blue Cross.
2. "Stress and Your Life," Metropolitan Life Insurance Company.

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## Examination Procedures and Correct Responses

The following pages contain a 35-question multiple-choice examination on the *It's Your Choice* program. The exam can be given as written or used in several ways. One option is to give the examination as a pre-test with questions randomly ordered, then give the exam again as a post-test and tabulate individual students' gains.

Another approach is to select questions that relate to one topic for a quiz on each unit. Teachers also can incorporate these questions into a unit quiz or final program exam they develop themselves. However these examination questions are used, teachers should avoid "teaching to the exam." As questions 18 and 23 refer to birth control pills with estrogen, these questions should be omitted if this optional topic was not covered.

To help teachers work with these exam questions, the correct answer and unit to which each question corresponds are presented:

| Question | Correct Response | Unit |
|---|---|---|
| 1 | b | II |
| 2 | d | III |
| 3 | d | V |
| 4 | d | II |
| 5 | b | I |
| 6 | b | III |
| 7 | b | VIII |
| 8 | b | II |
| 9 | d | VIII |
| 10 | c | VI |
| 11 | c | I |
| 12 | a | II |
| 13 | c | IV |
| 14 | b | VI |
| 15 | a | III |
| 16 | c | VII |
| 17 | a | V |
| 18 | d | VIII |
| 19 | d | VIII |
| 20 | a | III |
| 21 | c | IV |
| 22 | b | III |
| 23 | c | VII |
| 24 | d | II |
| 25 | a | VII |
| 26 | d | VIII |
| 27 | a | I |
| 28 | c | VII |
| 29 | a | V |
| 30 | a | I |
| 31 | a | II |
| 32 | d | III |
| 33 | a | IV |
| 34 | c | VI |
| 35 | b | VI |

**Examination Questions**

Directions: Mark the **best** answer by circling either a, b, c, or d for each question.

---

SAMPLE

The pump that forces blood throughout the circulatory system of the body is the:

[✓ a.] heart
b. foot
c. hand
d. liver

---

Remember, select the **one best** answer to **each** of the following questions.

1. A sure indicator of high blood pressure in a teen-ager is a repeated reading of:
   a. 1000
   b. 140/90
   c. 100/200
   d. 120/80

2. By counting your pulse right after exercise, you are measuring your:
   a. aerobic exercise rate
   b. resting heart rate
   c. blood pressure
   d. working heart rate

3. Which of these is **most** healthful for your heart?
   a. sodium
   b. palm oil
   c. coconut oil
   d. polyunsaturated oil

4. Hypertension can **best** be detected in its early stages by a:
   a. person's headaches
   b. person's constant movement
   c. blood cholesterol test
   d. blood pressure test

5. The term "cardiovascular" means:
   a. carrier vessels
   b. heart and blood vessels
   c. arteries and veins
   d. coronary vessels

6. Exercise that strengthens the heart **best** should occur:
   a. once a week for 45 to 55 minutes
   b. three times a week for 15 to 30 minutes
   c. every day for 5 minutes
   d. every day for 45 minutes or more

7. Emotional stress:
   a. is always bad for the heart and should be avoided
   b. is not harmful if the body and mind can return to a relaxed state
   c. almost never occurs with teen-agers
   d. may harm the body but sharpens the mind

8. Arteries are blood vessels that:
   a. are inside the heart
   b. carry blood away from the heart
   c. carry blood toward the heart
   d. carry blood both toward and away from the heart

9. When something stressful happens to you, the body responds with:
   a. deeper breathing
   b. stretched muscles
   c. increased blood flow to stomach, liver, intestines
   d. increased blood flow to major muscles

10. To find out how many calories you need daily, you must know your:
   a. height and weight
   b. activity level and sex (gender)
   c. weight and activity level
   d. height, sex (gender) and activity level

11. The health of our heart and blood vessels is **most** influenced by:
   a. unknown factors **and** our heredity
   b. how we live
   c. our heredity **and** how we live
   d. our heredity

12. Two instruments needed to measure blood pressure are a sphygmomanometer and a:
   a. stethoscope
   b. blood pressure cuff
   c. hypodermic needle
   d. thermometer

13. One controllable factor that harms heart health is:
   a. our intake of saccharin
   b. what sex we are
   c. how much sodium we consume
   d. exposure to polluted air

14. Compared with thin people, fat people have a higher chance of:
   a. having low blood pressure
   b. having hypertension
   c. having normal blood pressure
   d. being hyperactive

15. The "resting heart rate" can be measured:
   a. by counting the pulse
   b. with a blood pressure cuff
   c. by taking a blood pressure reading
   d. right after exercise

16. The habit-forming drug in tobacco is found in which combination of these?
   1. cigarettes
   2. pipe tobacco
   3. snuff
   4. marijuana
   5. cigars
   6. chewing tobacco

   a. 1, 2 and 5 only
   b. 1, 2, 4 and 5 only
   c. 1, 2, 3, 5 and 6 only
   d. 1, 2, 4, 5 and 6 only

17. Artery walls can get thick if you eat foods that have a lot of:
   a. saturated fat
   b. fiber
   c. sodium
   d. polyunsaturated fat

18. Tense muscles, increased heart rate and blood pressure, rapid and shallow breathing, and decreased blood flow to the digestive organs can result from:
    a. smoking and marijuana
    b. drinking alcohol
    c. using birth control pills with estrogen
    d. emotional stress

19. Which of the following **would not** be a good way to manage stress?
    a. use relaxation exercises
    b. recognize stressful events
    c. limit your involvement in stressful events
    d. work off the stress in competitive sports

20. A teen-ager with a resting heart rate of 80-89 is in:
    a. bad shape
    b. fair shape
    c. good shape
    d. very good shape

21. Table salt is high in:
    a. lecithin
    b. potassium
    c. sodium
    d. silicon

22. One type of aerobic activity is:
    a. weight lifting
    b. swimming
    c. sprinting
    d. football

23. The risk of having heart disease is increased among tobacco smokers who use:
    a. drugs with iodine
    b. beverages containing caffeine
    c. birth control pills having estrogen
    d. diet drinks with saccharin

24. Hypertension is the medical word for:
    a. a heart attack
    b. hyperactivity
    c. high body stress
    d. high blood pressure

25. Tar and nicotine are:
    a. two of the many poisons in tobacco
    b. the only two harmful elements in tobacco
    c. not in chewing tobacco
    d. found in smog as well as tobacco

26. When stress is not managed, it can harm the heart by leading to:
    a. nightmares and other mental problems
    b. hyperactivity
    c. slow heart rate and very low blood pressure
    d. hypertension

27. One form of heart disease is:
    a. hypertension
    b. cancer
    c. hyperactivity
    d. heart throb

28. The habit forming drug in tobacco is:
a. carbon monoxide
b. marijuana
c. nicotine
d. tar

29. One food **low** in saturated fat is:
a. corn oil
b. coconut oil
c. butter
d. palm oil

30. The risk of developing heart and blood vessel disease is:
a. less for women
b. less for men
c. the same for men and women
d. low for men and women

31. Systolic blood pressure is the:
a. force of the blood in the arteries when the heart contracts
b. pressure put on a bleeding wound
c. force of the blood during a headache
d. force of the blood in the arteries between heart contractions

32. One type of anaerobic activity is:
a. jogging
b. disco dancing
c. swimming
d. baseball

33. The amount of salt we need every day is:
a. 1/10th of one teaspoon
b. 1 teaspoon
c. 2 teaspoons
d. 1 tablespoon

34. Extreme thinness brought about by self-starvation is called:
a. hypertension
b. aneurism
c. anorexia nervosa
d. hyperactivity

35. Many people who are fat eat in response to a(an):
a. organic problem
b. external cue
c. hormone problem
d. internal cue

# Books and Brochures About Cardiovascular Health

## GENERAL CARDIOVASCULAR HEALTH

**Books:**

Chobanian, A.V., Loviglio, L., and O'Reilly, P., *The Heart Risk Book*, Bantam, New York, 1982.

Farquhar, J.W., *The American Way of Life Need Not Be Hazardous to Your Health*, Norton, New York, 1978.

Freis, E.D., and Lolata, G.B., *The High Blood Pressure Book: A Guide for Patients and Their Families*, Painter Hopkins, Sausalito, 1979.

Galton, L., *The Silent Disease: Hypertension*, Signet, New York, 1974.

Heyden, S., *The Heart Book*, Delair, New York, 1981.

Kezdi, P., *You and Your Heart*, Atheneum, New York, 1978.

Nora, J.J., *The Whole Heart Book*, Holt, Rinehart, and Winston, New York, 1980.

Vickery, D.M., *Life Plan For Your Health*, Addison-Wesley, Menlo Park, 1978.

**Brochures:**

"Como Diagnostical Los Medicos Las Enfermedades Del Corazon "(How Doctors Diagnose Heart Disease), Spanish version, National Heart, Lung & Blood Institute.

## BLOOD PRESSURE

**Books:**

O'Brien, E., and O'Malley, K., *High Blood Pressure*, Arco, New York, 1982.

York, 1982.

**Brochures:**

"High Blood Pressure and Your Lifestyle," National Kidney Foundation of Iowa, Inc.

"High Blood Pressure and What You Can Do About It," The High Blood Pressure Information Center.

"How Doctors Diagnose Heart Disease," Office of Information, National Heart, Lung, & Blood Institute.

"The Story Behind Those High Blood Pressure Readings," Department of Health and Human Services.

"Understanding High Blood Pressure," Searle & Company.

"What Every Woman Should Know About High Blood Pressure," American Heart Association.

## EXERCISE

**Books:**

Cooper, K., *The Aerobics Way*, M. Evans, New York, 1977.

Fixx, J.F., *The Complete Book of Running*, Random House, New York, 1977.

Sayer, P., and Thornton, P., *Aerobic Dancing: A Step at a Time*, Contemporary Books, Chicago, 1981.

**Brochures:**

" 'E' is for Exercise," American Heart Association.

"Exercise and your Heart," NIH Publication #81-1677; U.S. Department of Health and Human Services.

"Exercise Your Right to Live," Transamerica Occidental Life.

"Jazzercise," Jazzercise Inc.

"The Principles of Conditioning," American Heart Association, Alameda County Chapter.

## NUTRITION

**Books:**

Consumers Guide, *The Dieter's Complete Guide to... Calories, Carbohydrates, Sodium, Fats & Cholesterol*, Fawcett Columbine, New York, 1981.

Jones, J., *Diet for a Happy Heart*, 101 Publications, San Francisco, 1975.

Whitney, E.M., and Hamilton, E.M.N., *Understanding Nutrition*, West, St. Paul, 1981.

**Brochures:**

"Choosing Heart Healthy Cheeses," American Heart Association, Alameda County Chapter.

"Cocinando Sin Sal" (Cooking Without Salt), Spanish version, American Heart Association.

"Cooking Without Salt," American Heart Association.

"Eating for a Healthy Heart," American Heart Association, Alameda County Chapter.

"The Facts About How to Cut Down on Salt," National Kidney Foundation of Iowa, Inc.

"Morton Salt Helps You Measure: A Quick Guide to Measuring Sodium, Potassium and Calories in Popular Foods," Morton Salt.
"Nutrition and Your Health," U.S. Department of Health and Human Services.
"The Creative Eater's Handbook," American Heart Association, Alameda County Chapter.
"The Salt Watcher's Diet Guide," Abbott Laboratories.
"Shake the Salt Habit," American Heart Association, Alameda County Chapter.
"Sodium in Soft Drinks - Sodium in Mineral Waters," American Heart Association, Alameda County Chapter.
"Special Recipes for Low-Sodium Diets," General Foods Corporation.
"Summary: The U.S. Dietary Goals," American Heart Association, Alameda County Chapter.
"The Way to a Man's Heart: A Fat Controlled, Low Cholesterol Meal Plan to Reduce the Risk of Heart Attack," American Heart Association.

## WEIGHT CONTROL

**Books:**

American Alliance for Health, Physical Education, Recreation and Dance, *Health Related Physical Fitness Test Manual*, AAHPERD, 1900 Association Drive, Reston, VA 22091, 1980.
American Alliance for Health, Physical Education, Recreation and Dance, *Health Related Physical Fitness Technical Manual*, AAHPERD, 1900 Association Drive, Reston, VA 22091, 1984.
Jordan, A.H., and Levitz, L., *Eating is OK*, New American Library, New York City, 1977.
Levenkron, S., *Treating and Overcoming Anorexia Nervosa*, Charles Scribner's Sons, New York, 1982.
Mirkin, G., *Getting Thin*, Little, Brown and Co., Boston, 1983.

## TOBACCO

**Books:**

Brean, H., *How to Stop Smoking*, Pocket Books, New York, 1975.
Danaher, B.G., and Lichtenstein, E., *Become an Ex-Smoker*, Prentice Hall, 1978.
Rogers, J., *You Can Stop Smoking*, Pocket Books, New York, 1977.
Winter, R., *The Scientific Case Against Smoking*, Crown, New York, 1980.

**Brochures:**

"A Lifetime of Freedom from Smoking," American Lung Association.
"Children and Smoking: A Mesage to Parents," American Heart Association.
"Dangers of Smoking - Benefits of Quitting," American Lung Association.
"Everything You Always Wanted to Know About Dipping and Chewing... But Were Afraid to Ask," American Cancer Society.
"Fifty Most Often Asked Questions About Smoking and Health... and the Answers," American Cancer Society.
"Freedom from Smoking in 20 Days," American Lung Association.
"Helping Smokers Quit Kit," National Cancer Institute.
"How to Stop Smoking," American Heart Association.
"How to Quit Cigarettes," American Cancer Society
"Slim and Smokeless," American Cancer Society.
"Smoking and Heart Disease," American Heart Association.
"Quitter's Guide," American Cancer Society.
"Why Do You Smoke?" National Cancer Institute.

## STRESS MANAGEMENT

**Books:**

Adams, J.D., *Understanding and Managing Stress: A Book of Reading*, University Associates, San Diego, 1980.
Benson, H., *The Relaxation Response*, Avon Books, New York, 1975.
Friedman, M., and Rosenman, R.H., *Type A Behavior and Your Heart*, Fawcett Crest, New York, 1974.
Girdano, D., and Everly, G., *Controlling Stress and Tension: A Holistic Approach*, Prentice Hall, New Jersey, 1979.
Jacobsen, E., *You Must Relax*, McGraw-Hill, New York, 1978.
McQuade, W., and Aikman, A., *Stress*, Bantam, New York, 1974.
Ornish, D., *Stress, Diet, & Your Heart*, Holt Rinehart and Winston, New York, 1982.
Walter, C.E., *Learn to Relax*, Prentice Hall, New Jersey, 1975.

**Brochures:**

"Stress," Blue Cross.
"Stress and Your Life," Metropolitan Life Insurance Company.

## CONSUMER ISSUES

**Books:**

Cornacchia, H.J., and Barrett, S., *Consumer Health: A Guide to Intelligent Decisions*, Mosby, St. Louis, 1980.
Cornacchia, H.J., and Barrett, S., *Shopping for Health Care*, Mosby, St. Louis, 1982.
Correy, J.M., *Consumer Health: Facts, Skills and Decisions*, Wadsworth, Belmont, CA, 1983.

**Brochures:**

"Nutrition Labeling," American Heart Association.

# Sources of Cardiovascular Health Brochures

Abbott Laboratories
North Chicago, IL 60064

American Cancer Society
7370 Greenville Avenue
Dallas, TX 75231

American Heart Association
National Center
7320 Greenville Avenue
Dallas, TX 75231

American Heart Association
Alameda County Chapter
11200 Golf Links Road
Oakland, CA 94605

American Heart Association
Golden Empire Chapter
1727 30th Street
P.O. Box 160126
Sacramento, CA 95816

Bay Area County
Hypertension Council
2647 E. 14th Street
Oakland, CA 94601

Blue Cross of California
1950 Franklin
Oakland, CA 94659

Boehringer Ingelheim, Ltd.
Ridgefield, CT 06877

California Avocado Advisor
Advisory Board
4533-B MacArthur Blvd.
Newport Beach, CA 92660

General Foods Corp.
250 North Street
White Plains, NY 10625

The High Blood Pressure
Information Center
120/80 National Institutes of Health
Bethesda, MD 20205

Jazzercise, Inc.
2808 Roosevelt Street
Carlsbad, CA 92008

Metropolitan Life Insurance Company
1 Madison Avenue
New York, NY 10010

Morton Salt
110 North Wacker Dr.
Chicago, IL 60606

National Athletic Heart Institute
575 E. Hardy Street #104
Inglewood, CA 90301

National Cancer Institute
Office of Cancer Communications
Bethesda, MD 20205

National Kidney Foundation of Iowa, Inc.
3611 Hickman Road
Des Moines, Iowa 50322

Office of Information
National Heart, Lung & Blood Institute
Bethesda, MD 20014

San Francisco Regional Cancer
Foundation
14th Avenue and Lake Street
San Francisco, CA 94118

Searle and Company
San Juan, Puerto Rico 00936

U.S. Department of Health and Human
Services
Public Health Service
Food and Drug Administration
5600 Fisher Lane
Rockville, MD 20857

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**AHA, San Diego County Chapter**
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**Merced/Mariposa Division**
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**Stanislaus/Tuolumne Division**
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**Yuba/Sutter/Colusa Division**
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*Field Coordinator: Christy Jefferson*
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**Western Division**
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**Metropolitan Division**
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